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L STAR TABLES

0001	REF	1	32,3755	BANK	32	
0002	REF	1	14,2000	SETLOC	STARTAB	
0003			14,3405	BANK		
0004	REF	1		COUNT	14/STARS	
0500			14,3405 15281 0	2DEC	+.8341953207 B-1	STAR 37 X
0500			14,3406 27231 1	2DEC	-.2394362567 B-1	STAR 37 Y
0501			14,3407 74126 1	2DEC	-.4987780849 B-1	STAR 37 Z
0501			14,3410 61161 0	2DEC	+.8138753897 B-1	STAR 36 X
0502			14,3411 70032 1	2DEC	-.5559063490 B-1	STAR 36 Y
0502			14,3412 54470 0	2DEC	+.1690413589 B-1	STAR 36 Z
0503			14,3413 15013 1	2DEC	+.4540570017 B-1	STAR 35 X
0503			14,3414 10432 0	2DEC	-.5393383149 B-1	STAR 35 Y
0504			14,3415 87088 0	2DEC	+.3200014224 B-1	STAR 34 X
0504			14,3416 40370 1	2DEC	-.4436740480 B-1	STAR 34 Y
0505			14,3417 02550 0	2DEC	-.8371095879 B-1	STAR 34 Z
0505			14,3420 31133 1	2DEC	+.7091871552 B-1	STAR 35 Z
0506			14,3421 07207 0	2DEC	+.3200014224 B-1	STAR 34 X
0506			14,3422 24243 1	2DEC	-.2568045150 B-1	STAR 33 Z
0507			14,3423 67275 0	2DEC	+.4535361097 B-1	STAR 32 X
0507			14,3424 67544 0	2DEC	-.7934422090 B-1	STAR 33 Y
0508			14,3425 13281 0	2DEC	-.8780537171 B-1	STAR 32 Y
0508			14,3426 25121 1	2DEC	+.1527307006 B-1	STAR 32 Z
0509			14,3427 05075 0	2DEC	+.5518180037 B-1	STAR 33 X
0509			14,3430 18350 0	2DEC	-.4436740480 B-1	STAR 34 Y
0510			14,3431 70715 0	2DEC	-.8371095879 B-1	STAR 34 Z
0510			14,3432 55404 1	2DEC	+.2067145272 B-1	STAR 31 X
0511			14,3433 62466 1	2DEC	-.8720349419 B-1	STAR 31 Y
0511			14,3434 54577 0	2DEC	-.4436486945 B-1	STAR 31 Z
0512			14,3435 10650 0	2DEC	+.1216171923 B-1	STAR 30 X
0512			14,3436 17202 1			
0513			14,3437 63234 1			
0513			14,3440 43704 0			
0514			14,3441 73710 0			
0514			14,3442 50170 1			
0515			14,3443 07203 1			
0515			14,3444 13812 0			
0516			14,3445 81746 0			
0516			14,3448 77370 0			
0517			14,3447 02343 1			
0517			14,3450 05340 0			
0518			14,3451 03235 0			
0518			14,3452 14762 1			
0519			14,3453 62030 0			
0519			14,3454 51212 1			
0520			14,3455 70715 0			
0520			14,3456 64117 1			
0521			14,3457 01744 1			
0521			14,3480 11157 1			

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L STAR TABLES

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0522	14,3461	63531 0	2DEC	-.7703014754	B-1	STAR 30	Y
0522	14,3462	66055 1	2DEC	+.6259751556	B-1	STAR 30	Z
0523	14,3463	12007 0	2DEC	-.1126265542	B-1	STAR 29	X
0523	14,3464	37503 0	2DEC	-.9694679589	B-1	STAR 29	Y
0524	14,3465	76145 0	2DEC	+.2176238347	B-1	STAR 29	Z
0524	14,3466	53477 0	2DEC	-.1147908312	B-1	STAR 28	X
0525	14,3467	60372 1	2DEC	-.3399437395	B-1	STAR 28	Y
0525	14,3470	43824 0	2DEC	-.9334138229	B-1	STAR 28	Z
0526	14,3471	03370 0	2DEC	-.4440853383	B-1	STAR 27	X
0526	14,3472	15121 1	2DEC	-.3518772848	B-1	STAR 27	Y
0527	14,3473	76123 0	2DEC	-.8239987185	B-1	STAR 27	Z
0527	14,3474	64245 0	2DEC	-.7159446596	B-1	STAR 26	X
0528	14,3475	72437 1	2DEC	+.4511589595	B-1	STAR 26	Y
0528	14,3476	45623 1	2DEC	-.5218285404	B-1	STAR 26	Z
0529	14,3477	61041 0	2DEC	-.7662552143	B-1	STAR 25	X
0529	14,3500	57124 1	2DEC	-.2907877154	B-1	STAR 25	Y
0530	14,3501	72275 1	2DEC	-.5908847707	B-1	STAR 24	Z
0530	14,3502	55385 1	2DEC	-.8899901699	B-1	STAR 24	X
0531	14,3503	62841 0	2DEC	-.4160817959	B-1	STAR 24	Y
0531	14,3504	72150 0	2DEC	-.9171065276	B-1	STAR 23	X
0532	14,3505	70712 1	2DEC	+.7800365758	B-1	STAR 23	Z
0532	14,3506	41542 1	2DEC	-.3500098785	B-1	STAR 22	Y
0533	14,3507	67383 0	2DEC	-.2176238347	B-1	STAR 22	X
0533	14,3510	50441 0	2DEC	-.1147908312	B-1	STAR 22	Y
0534	14,3511	64426 0	2DEC	-.9694679589	B-1	STAR 22	Z
0534	14,3512	77263 0	2DEC	+.7703014754	B-1	STAR 21	X
0535	14,3513	07157 0	2DEC	-.5326042377	B-1	STAR 21	Y
0535	14,3514	34058 0	2DEC	-.511943804	B-1	STAR 21	Z
0536	14,3515	63326 0	2DEC	-.2907877154	B-1	STAR 20	X
0536	14,3516	77723 1	2DEC	-.4440853383	B-1	STAR 20	Y
0537	14,3517	67518 1	2DEC	-.3518772848	B-1	STAR 20	Z
0537	14,3520	72586 1	2DEC	-.8239987185	B-1	STAR 20	X
0538	14,3521	05231 1	2DEC	-.7159446596	B-1	STAR 20	Y
0538	14,3522	14031 0	2DEC	+.2176238347	B-1	STAR 19	Z
0539	14,3523	64753 1	2DEC	-.9694679589	B-1	STAR 19	X
0539	14,3524	63156 0	2DEC	+.7703014754	B-1	STAR 19	Y
0540	14,3525	71237 1	2DEC	-.5326042377	B-1	STAR 19	Z
0540	14,3526	42272 0	2DEC	-.511943804	B-1	STAR 19	X
0541	14,3527	68427 0	2DEC	-.2907877154	B-1	STAR 19	Y
0541	14,3530	64280 1	2DEC	-.4440853383	B-1	STAR 18	Z
0542	14,3531	68546 0	2DEC	-.3518772848	B-1	STAR 18	X
0542	14,3532	73302 1	2DEC	-.8239987185	B-1	STAR 18	Y
0543	14,3533	73281 0	2DEC	-.7159446596	B-1	STAR 18	Z
0543	14,3534	73575 1	2DEC	+.2176238347	B-1	STAR 18	X
0544	14,3535	14122 0	2DEC	-.9694679589	B-1	STAR 18	Y
0544	14,3536	07016 1	2DEC	+.7703014754	B-1	STAR 18	Z
0545	14,3537	61247 1	2DEC	-.5326042377	B-1	STAR 17	X
0545	14,3540	42015 0	2DEC	-.511943804	B-1	STAR 17	Y
0546	14,3541	72314 1	2DEC	-.2907877154	B-1	STAR 17	Z
0546	14,3542	67004 1	2DEC	-.4440853383	B-1	STAR 17	X

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0547	14,3543	74744 0	ZDEC	-.1908108439	B-1	STAR 22	Z
0547	14,3544	74104 1	ZDEC	-.4524416631	B-1	STAR 21	X
0548	14,3545	70605 0	ZDEC	-.0492700670	B-1	STAR 21	Y
0548	14,3546	63103 0	ZDEC	-.8904319167	B-1	STAR 21	Z
0549	14,3547	77154 1	ZDEC	-.9525633510	B-1	STAR 20	X
0549	14,3550	54113 0	ZDEC	-.0591313500	B-1	STAR 20	Y
0550	14,3551	61601 1	ZDEC	-.2985406935	B-1	STAR 20	Z
0550	14,3552	62472 1	ZDEC	-.9656240240	B-1	STAR 19	X
0551	14,3553	60604 0	ZDEC	+.0526067543	B-1	STAR 19	Y
0551	14,3554	63166 0	ZDEC	+.2545224762	B-1	STAR 19	Z
0552	14,3555	77033 1	ZDEC	-.6806970465	B-1	STAR 18	X
0552	14,3556	63044 1	ZDEC	+.4638127405	B-1	STAR 18	Y
0553	14,3557	73162 0	ZDEC	+.2099464122	B-1	STAR 18	Z
0553	14,3560	53261 1	ZDEC	-.1462142053	B-1	STAR 17	Z
0554	14,3561	60431 1	ZDEC	-.4656185921	B-1	STAR 16	X
0554	14,3562	63350 1	ZDEC	+.4775604724	B-1	STAR 16	Y
0555	14,3563	00680 1	ZDEC	+.7450624681	B-1	STAR 16	Z
0555	14,3564	22763 0	ZDEC	-.3611937602	B-1	STAR 15	X
0556	14,3565	04045 1	ZDEC	+.5748077640	B-1	STAR 15	Y
0556	14,3566	01424 1	ZDEC	-.7342581827	B-1	STAR 15	Z
0557	14,3567	62165 1	ZDEC	-.4116502629	B-1	STAR 14	X
0557	14,3570	45335 0	ZDEC	+.9086387314	B-1	STAR 14	Y
0558	14,3571	07327 0	ZDEC	+.0924678785	B-1	STAR 14	Z
0558	14,3572	21564 0					
0559	14,3573	03267 1					
0559	14,3574	34557 1					
0560	14,3575	63472 0					
0560	14,3576	50705 0					
0561	14,3577	11681 0					
0561	14,3600	21433 0					
0562	14,3601	75501 1					
0562	14,3602	72421 0					
0563	14,3603	70431 0					
0563	14,3804	65316 0					
0564	14,3605	07510 1					
0564	14,3606	12666 1					
0565	14,3607	13727 1					
0565	14,3610	21520 0					
0566	14,3611	72161 1					
0566	14,3612	43161 0					
0567	14,3613	11144 0					
0567	14,3614	32323 1					
0568	14,3615	64200 1					
0568	14,3616	76476 0					
0569	14,3617	71323 0					
0569	14,3620	70284 0					
0570	14,3621	16403 1					
0570	14,3622	05717 0					
0571	14,3623	01365 0					
0571	14,3624	17662 0					

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0572	14,3625	75055 0	2DEC	-.1818957154	B-1	STAR 13	X
0572	14,3626	75101 0	2DEC	+.9405318128	B-1	STAR 13	Y
0573	14,3627	17030 1	2DEC	-.2869039173	B-1	STAR 13	Z
0573	14,3630	32613 1	2DEC	-.0614360769	B-1	STAR 12	X
0574	14,3631	73321 0	2DEC	+.8031700108	B-1	STAR 12	Y
0574	14,3632	65867 0	2DEC	-.7952430739	B-1	STAR 12	Z
0575	14,3633	77010 0	2DEC	+.1373948084	B-1	STAR 11	X
0575	14,3634	66714 0	2DEC	+.6813398852	B-1	STAR 11	Y
0576	14,3635	11515 0	2DEC	+.7189568241	B-1	STAR 11	Z
0576	14,3636	05314 1	2DEC	+.2013426456	B-1	STAR 10	X
0577	14,3637	63215 1	2DEC	+.9689888101	B-1	STAR 10	Y
0577	14,3640	53630 1	2DEC	-.1432544058	B-1	STAR 10	Z
0578	14,3641	02145 0	2DEC	+.4107492871	B-1	STAR 9	X
0578	14,3642	21163 0	2DEC	+.8925545449	B-1	STAR 9	Y
0579	14,3643	12715 1	2DEC	+.2831507435	B-1	STAR 9	Z
0579	14,3644	21123 1	2DEC	+.4987190610	B-1	STAR 8	X
0580	14,3645	13401 0	2DEC	+.0892188921	B-1	STAR 8	Y
0580	14,3646	28125 0	2DEC	-.5313738486	B-1	STAR 8	Z
0581	14,3647	03181 1	2DEC	-.6484940879	B-1	STAR 7	X
0581	14,3650	14810 0	2DEC	+.0131955837	B-1	STAR 7	Y
0582	14,3651	17401 1	2DEC	-.1082544058	B-1	STAR 7	Z
0582	14,3652	36465 0	2DEC	+.0892188921	B-1	STAR 6	X
0583	14,3653	75552 1	2DEC	+.4987190610	B-1	STAR 6	Y
0583	14,3654	56556 1	2DEC	-.5313738486	B-1	STAR 6	Z
0584	14,3655	05473 1	2DEC	+.0892188921	B-1	STAR 5	X
0584	14,3656	01565 0	2DEC	-.6484940879	B-1	STAR 5	Y
0585	14,3657	16217 1	2DEC	+.0131955837	B-1	STAR 5	Z
0585	14,3660	31643 1	2DEC	-.1082544058	B-1	STAR 4	X
0588	14,3661	04417 1	2DEC	+.4987190610	B-1	STAR 4	Y
0588	14,3662	22211 0	2DEC	-.5313738486	B-1	STAR 4	Z
0587	14,3663	08444 0	2DEC	+.0892188921	B-1	STAR 3	X
0587	14,3664	33354 0	2DEC	-.6484940879	B-1	STAR 3	Y
0588	14,3665	07785 1	2DEC	+.0131955837	B-1	STAR 3	Z
0588	14,3666	20153 1	2DEC	-.1082544058	B-1	STAR 2	X
0589	14,3667	14154 1	2DEC	+.4987190610	B-1	STAR 2	Y
0589	14,3670	23613 1	2DEC	-.5313738486	B-1	STAR 2	Z
0590	14,3671	13202 0	2DEC	+.0892188921	B-1	STAR 1	X
0590	14,3672	05024 1	2DEC	-.6484940879	B-1	STAR 1	Y
0591	14,3673	13243 0	2DEC	+.0131955837	B-1	STAR 1	Z
0591	14,3674	07865 0	2DEC	-.1082544058	B-1	STAR 0	X
0592	14,3675	01067 1	2DEC	+.4987190610	B-1	STAR 0	Y
0592	14,3676	01242 1	2DEC	-.5313738486	B-1	STAR 0	Z
0593	14,3677	10581 1	2DEC	+.0892188921	B-1	STAR 0	X
0593	14,3700	05866 1	2DEC	-.6484940879	B-1	STAR 0	Y
0594	14,3701	10401 0	2DEC	+.0131955837	B-1	STAR 0	Z
0594	14,3702	00357 0	2DEC	-.1082544058	B-1	STAR 0	X
0595	14,3703	65477 0	2DEC	+.4987190610	B-1	STAR 0	Y
0595	14,3704	61124 1	2DEC	-.5313738486	B-1	STAR 0	Z
0596	14,3705	00154 1	2DEC	+.0892188921	B-1	STAR 0	X
0596	14,3706	03111 0	2DEC	-.6484940879	B-1	STAR 0	Y

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0597	14,3707	00077 1	2DEC	+.0078043793	B-1	STAR	5	Y
0597	14,3710	35676 0	2DEC	+.9998824772	B-1	STAR	5	Z
0598	14,3711	17777 0	2DEC	+.4917355818	B-1	STAR	4	X
0598	14,3712	01142 1	2DEC	+.2203784481	B-1	STAR	4	Y
0599	14,3713	07874 0	2DEC	-.8423950835	B-1	STAR	4	Z
0599	14,3714	11416 1	2DEC	+.4778748280	B-1	STAR	3	X
0600	14,3715	03415 1	2DEC	+.1164935557	B-1	STAR	3	Y
0600	14,3716	12707 1	2DEC	+.8707790771	B-1	STAR	3	Z
0601	14,3717	02413 0	2DEC	+.9342726691	B-1	STAR	2	X
0601	14,3720	43135 1	2DEC	+.1732973829	B-1	STAR	2	Y
0602	14,3721	07511 0	2DEC	-.3118128958	B-1	STAR	2	Z
0602	14,3722	03423 1	2DEC	+.8749183324	B-1	STAR	1	X
0603	14,3723	01872 0	2DEC	+.0258918990	B-1	STAR	1	Y
0603	14,3724	12054 0	2DEC	+.4835778442	B-1	STAR	1	Z
0604	14,3725	15735 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0604	14,3728	15405 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0605	14,3727	18745 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0605	14,3730	21783 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0606	14,3731	02813 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0606	14,3732	24675 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0607	14,3733	73007 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0607	14,3734	50430 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0608	14,3735	15777 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0608	14,3736	12457 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0609	14,3737	00324 1	2DEC	-.07571 0	CATLOG	DEC	8889	
0609	14,3740	03285 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0610	14,3741	07571 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0610	14,3742	17020 0	2DEC	-.07571 0	CATLOG	DEC	8889	
0611	14,3743	15325 1	2DEC	-.07571 0	CATLOG	DEC	8889	

L AGC BLOCK TWO SELF-CHECK

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R0001 PROGRAM DESCRIPTION  
R0003 PROGRAM NAME - SELF-CHECK  
R0005 MOD NO - 1  
R0007 MOD BY - GAUNTT  
R0008 FUNCTIONAL DESCRIPTION

DATE 20 DECEMBER 1967  
LOG SECTION AGC BLOCK TWO SELF-CHECK  
ASSEMBLY SUBROUTINE UTILITY REV 25

R0009 PROGRAM HAS TWO MAIN PARTS. THE FIRST IS SELF-CHECK WHICH RUNS AS A ZERO PRIORITY JOB WITH NO CORE SET, AS PART OF THE BACK-UP IDLE LOOP. THE SECOND IS SHOW-BANKSUM WHICH RUNS AS A REGULAR EXECUTIVE JOB WITH ITS OWN STARTING VERB.

R0014 THE PURPOSE OF SELF-CHECK IS TO CHECK OUT VARIOUS PARTS OF THE COMPUTER AS OUTLINED BELOW IN THE OPTIONS.  
R0016 THE PURPOSE OF SHOW-BANKSUM IS TO DISPLAY THE SUM OF EACH BANK, ONE AT A TIME.

R0020 IN ALL THERE ARE 7 POSSIBLE OPTIONS IN THIS BLOCK II VERSION OF SELF-CHECK. MORE DETAIL DESCRIPTION MAY BE  
R0022 FOUND IN E-2065 BLOCK II AGC SELF-CHECK AND SHOW BANKSUM BY EDWIN D. SMALLY DECEMBER 1966, AND ADDENDA 2 AND 3.

R0024 THE DIFFERENT OPTIONS ARE CONTROLLED BY PUTTING DIFFERENT NUMBERS IN THE SMODE REGISTER (NOUN 27). BELOW IS  
R0026 A DESCRIPTION OF WHAT PARTS OF THE COMPUTER THAT ARE CHECKED BY THE OPTIONS, AND THE CORRESPONDING NUMBER, IN  
R0028 OCTAL, TO LOAD INTO SMODE.

R0032 +-4 ERASABLE MEMORY

R0033 +-5 FIXED MEMORY

R0034 +-1,2,3,6,7,10 EVERYTHING IN OPTIONS 4 AND 5.

R0036 -0 SAME AS +-10 UNTIL AN ERROR IS DETECTED.

R0037 +0 NO CHECK, PUTS COMPUTER INTO THE BACKUP IDLE LOOP.

R0038 WARNINGS

R0039 USE OF E MEMORY RESERVED FOR SELF-CHECK (EVEN IN IDLE LOOP) AS TEMP STORAGE BY OTHER PROGRAMS IS DANGEROUS.  
R0041 SMODE SET GREATER THAN OCT 10 PUTS COMPUTER INTO BACKUP IDLE LOOP.

R0042 CALLING SEQUENCE

R0043 TO CALL SELF-CHECK KEY IN

V 21 N 27 E OPTION NUMBER E

R0044 TO CALL SHOW-BANKSUM KEY IN

V 91 E DISPLAYS FIRST BANK

R0045 V 33 E PROCEED, DISPLAYS NEXT BANK

R0046 EXIT MODES, NORMAL AND ALARM

R0051 SELF-CHECK NORMALLY CONTINUES INDEFINITELY UNLESS THERE IS AN ERROR DETECTED. IF SO + OPTION NUMBERS PUT  
R0053 COMPUTER INTO BACKUP IDLE LOOP, - OPTION NUMBERS RESTART THE OPTION.

R0054 THE -0 OPTION PROCEEDS FROM THE LINE FOLLOWING THE LINE WHERE THE ERROR WAS DETECTED.

R0055 SHOW-BANKSUM PROCEEDS UNTIL A TERMINATE IS KEYED IN (V 34 E). THE COMPUTER IS PUT INTO THE BACKUP IDLE LOOP

R0059 OUTPUT

R0060

## L AGC BLOCK TWO SELF-CHECK

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R0061 SELF-CHECK UPON DETECTING AN ERROR LOADS THE SELF-CHECK ALARM CONSTANT (01102) INTO THE FAILREG SET AND  
 R0063 TURNS ON THE ALARM LIGHT. THE OPERATOR MAY THEN DISPLAY THE THREE FAILREGS BY KEYING IN V 05 N 09 E. FOR FURTHER  
 R0065 INFORMATION HE MAY KEY IN V 05 N 08 E, THE DSKY DISPLAY IN R1 WILL BE ADDRESS+1 OF WHERE THE ERROR WAS DETECTED,  
 R0067 IN R2 THE BBCON OF SELF-CHECK, AND IN R3 THE TOTAL NUMBER OF ERRORS DETECTED BY SELF-CHECK SINCE THE LAST MAN  
 R0069 INITIATED FRESH START (SLAP1).  
 R0073 SHOW-BANKSUM STARTING WITH BANK 0 DISPLAYS IN R1 THE BANK SUM (A +-NUMBER EQUAL TO THE BANK NUMBER), IN R2  
 R0075 THE BANK NUMBER, AND IN R3 THE BUGGER WORD.  
 R0076 ERASABLE INITIALIZATION REQUIRED

R0077 ACCOMPLISHED BY FRESH START  
 R0078 MODE SET TO +0

R0079 DEBRIS

R0080 ALL EXITS FROM THE CHECK OF ERASABLE (ERASCHK) RESTORE ORIGINAL CONTENTS TO REGISTERS UNDER CHECK.  
 R0082 EXCEPTION IS A RESTART. RESTART THAT OCCURS DURING ERASCHK RESTORES ERASABLE, UNLESS THERE IS EVIDENCE TO DOUBT  
 R0084 IN MEMORY, IN WHICH CASE PROGRAM THEN DOES A FRESH START (DOPSTART).

R0085			25,3766	BANK 25
R0086	REP 1		43,2000	SETLOC SELFCHC
R0087			43,3230	BANK
R0088	REP 1			COUNT 43/SELF
R0089	REP 76	LAST 1174	4712	SBIT1 EQUALS BIT1
R0090	REP 44	LAST 1174	4711	SBIT2 EQUALS BIT2
R0091	REP 33	LAST 1174	4710	SBIT3 EQUALS BIT3
R0092	REP 40	LAST 1174	4707	SBIT4 EQUALS BIT4
R0093	REP 39	LAST 1089	4708	SBIT5 EQUALS BITS
R0094	REP 44	LAST 1131	4705	SBIT6 EQUALS BIT6
R0095	REP 53	LAST 1171	4704	SBIT7 EQUALS BIT7
R0096	REP 28	LAST 1196	4703	SBIT8 EQUALS BIT8
R0097	REP 32	LAST 1010	4702	SBIT9 EQUALS BIT9
R0098	REP 37	LAST 1174	4701	SBIT10 EQUALS BIT10
R0099	REP 35	LAST 1174	4700	SBIT11 EQUALS BIT11
R0100	REP 31	LAST 1174	4677	SBIT12 EQUALS BIT12
R0101	REP 44	LAST 1174	4676	SBIT13 EQUALS BIT13
R0102	REP 75	LAST 1335	4675	SBIT14 EQUALS BIT14
R0103	REP 49	LAST 1174	4674	SBIT15 EQUALS BIT15
R0104	REP 252	LAST 1294	4714	S+ZERO EQUALS ZERO
R0105	REP 77	LAST 1363	4712	S+1 EQUALS BIT1
R0106	REP 45	LAST 1363	4711	S+2 EQUALS BIT2
R0107	REP 45	LAST 1337	6214	S+3 EQUALS THREE
R0108	REP 19	LAST 1335	4710	S+4 EQUALS FOUR
R0109	REP 28	LAST 1109	4715	S+5 EQUALS FIVE

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## L ACC BLOCK TWO SELF-CHECK

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0110	REP	40	LAST	1338	6211		S+6	EQUALS SIX
0111	REP	18	LAST	1174	4716		S+7	EQUALS SEVEN
0112	REP	13	LAST	1164	4373		S8BITS	EQUALS LOC8
0113	REP	4	LAST	1062	4726		CNTRCON	= OCT150
0114					43,3230	00061 0	ERASCON1	OCTAL 00061
0115					43,3231	01373 1	ERASCON2	OCTAL 01373
0116	REP	8	LAST	1174	4744		ERASCON3	= OCT1400
0117					43,3232	01461 0	ERASCON4	OCTAL 01461
0118					43,3233	01773 0	S10BITS	EQUALS LOC10
0119	REP	19	LAST	1099	4747		SPK03	EQUALS PRI03
0120	REP	4	LAST	919	4755		-MAXADR	= HIS
0121	REP	6	LAST	1174	4364		43,3234	00060 1
0122					43,3235	60017 1	SIXTY	OCTAL 00060
0123					43,3236	17777 0	SUPRCON	OCTAL 60017
0124					43,3237	25252 0	S13BITS	OCTAL 17777
0125					43,3240	52400 1	CONC+S1	OCTAL 25252
0126					43,3241	78777 1	CONC+S2	OCTAL 52400
0127							ERASCON5	OCTAL 78777
0128	REP	2	LAST	199	5630		S-7	= OCT77770
0129	REP	3	LAST	1063	6061		S-4	EQUALS NEG4
0130	REP	3	LAST	569	7714		S-3	EQUALS NEG3
0131	REP	6	LAST	1178	7715		S-2	EQUALS NEG2
0132	REP	29	LAST	1174	7716		S-1	EQUALS NEGONE
0133	REP	15	LAST	1071	4713		S-ZERO	EQUALS NEG0

00377  
USED IN CNTRCHK  
USED IN BRASCHK  
USED IN ERASCHK  
USED IN ERASCHK  
USED IN ERASCHK  
USED IN ERASCHK  
01777, USED IN ERASCHK  
06000, USED IN ROPECHK  
FOR ROPECHK

USED IN ROPECHK  
USED IN CYCLSHPT  
USED IN CYCLSHPT

SELFCHK RETURN ADDRESS. SHOULD BE PUT  
IN SELPRET WHEN GOING FROM SELFCHK TO  
SHOWSUM AND PUT IN SKEEP1 WHEN GOING  
FROM SHOWSUM TO SELF-CHECK.

IS IT NECESSARY TO RESTORE ERASABLE  
NO

RESTORE THE TWO ERASABLE REGISTERS

SAVE Q FOR FAILURE LOCATION  
FOR DISPLAY WITH BBANK AND ERCOUNT  
KEEP TRACK OF NUMBER OF MALFUNCTIONS.

SELF-CHECK MALFUNCTION INDICATOR

0140	REP	6	LAST	162	43,3244	3 1360 0	PRERRORS	CA	ERESTORE
0141					43,3245	0 0006 1		EXTEND	
0142	REP	1			43,3246	1 3255 1	B2P	ERRORS	
0143					43,3247	0 0006 1		EXTEND	
0144	REP	3	LAST	182	43,3250	3 1376 1	DCA	SKEEP5	
0145	REP	3	LAST	162	43,3251	51<377 0	INDEX	SKEEP7	
0146					43,3252	52 001 1	DXCH	0000	
0147	REP	2	LAST	257	43,3253	3 4714 1	CA	S+ZERO	
0148	REP	7	LAST	1364	43,3254	55<360 1	TS	ERESTORE	
0149					43,3255	0 0004 0	ERRORS	INHINT	
0150	REP	303	LAST	1287	43,3256	3 0002 0	CA	Q	
0151	REP	3	LAST	362	43,3257	55<357 0	TS	SPAIL	
0152	REP	3	LAST	266	43,3260	55<363 1	TS	ALMCADR	
0153	REP	3	LAST	179	43,3261	25<365 0	INCR	ERCOUNT	
0154	REP	1			43,3262	0 5541 1	TCALARM2	TC	ALARM2
0155					43,3263	01102 0	OCT	01102	
0156	REP	5	LAST	266	43,3264	11<362 0	CCS	SMODE	
0157	REP	3	LAST	1364	43,3265	3 4714 1	SIDLOOP	CA	S+ZERO

## L AGC BLOCK TWO SELF-CHECK

0158	REP	6	LAST 1364	43,3286	55=362 0	TS	SMODE		
0159	REP	5	LAST 1364	43,3287	0 3334 0	TC	SELFOHK	GO TO IDLE LOOP	
0160	REP	4	LAST 1364	43,3270	0 1357 1	TC	SPAIL	CONTINUE WITH SELF-CHECK	
0161	REP	344	LAST 1338	43,3271	10 000 0	-1CHK	CCS	A	
0162	REP	1		43,3272	1 3244 1		TCP	PRERRORS	
0163	REP	2	LAST 1385	43,3273	1 3244 1		TCP	PRERRORS	
0164	REP	345	LAST 1385	43,3274	10 000 0		CCS	A	
0165	REP	3	LAST 1385	43,3275	1 3244 1		TCP	PRERRORS	
0166	REP	304	LAST 1364	43,3276	0 0002 0		TC	0	
0167				43,3277	0 0008 1	SMODECHK EXTEND			
0168	REP	4	LAST 1364	43,3300	23=371 0	QCH	SKEEP1		
0169	REP	1		43,3301	0 3330 1	TC	CHECKNJ	CHECK FOR NEW JOB	
0170	REP	7	LAST 1385	43,3302	11=382 0	CCS	SMODE		
0171	REP	1		43,3303	0 3310 0	TC	SOPTIONS		
0172	REP	1		43,3304	0 3301 0	TC	SMODECHK +2	TO BACKUP IDLE LOOP	
0173	REP	2	LAST 1385	43,3305	0 3310 0	TC	SOPTIONS		
0174	REP	2	LAST 80	43,3308	25=368 0	INCR	SCOUNT		
0175	REP	5	LAST 1385	43,3307	0 1371 0	TC	SKEEP1	CONTINUE WITH SELF-CHECK	
0176	REP	1		43,3310	6 5830 1	SOPTIONS AD	S-7		
0177				43,3311	0 0008 1	EXTEND			
0178				43,3312	6 3314 1	B2MP	+2		
0179	REP	1		43,3313	0 3265 0	BNKOPTN	TC	SIDLOOP	
0180	REP	3	LAST 1385	43,3314	25=368 0	INCR	SCOUNT		
0181	REP	1		43,3315	8 4718 0	AD	S-7		
0182	REP	348	LAST 1385	43,3318	50 000 1	INDEX	A		
0183	REP	1		43,3317	0 3320 0	TC	SOPTION1		
0184	REP	6	LAST 1385	43,3320	0 1371 0	SOPTION1	TC	SKEEP1	
0185	REP	7	LAST 1385	43,3321	0 1371 0	SOPTION2	TC	SKEEP1	
0186	REP	8	LAST 1385	43,3322	0 1371 0	SOPTION3	TC	SKEEP1	
0187	REP	1		43,3323	0 3335 1	SOPTION4	TC	ERASCHK	
0188	REP	1		43,3324	0 3516 0	SOPTION5	TC	ROPECHK	
0189	REP	9	LAST 1385	43,3325	0 1371 0	SOPTION6	TC	SKEEP1	
0190	REP	10	LAST 1385	43,3328	0 1371 0	SOPTION7	TC	SKEEP1	
0191	REP	11	LAST 1385	43,3327	0 1371 0	SOPTION10	TC	SKEEP1	
0192				43,3330	0 0006 1	CHECKNJ	EXTEND		
0193	REP	7	LAST 1190	43,3331	23=381 1	QCH	SELPRET		
0194	REP	61	LAST 1230	43,3332	0 4574 0	TC	POSTJUMP	SAVE RETURN ADDRESS WHILE TESTING NEWJOB	
0195	REP	2	LAST 1185	43,3333	03231 1	CADR	ADVAN	TO SEE IF ANY JOBS HAVE BECOME ACTIVE.	
0196	REP	2	LAST 1385	43,3334	0 3277 0	SELFOHK	TC	SMODECHK	** CHARLEY, COME IN HERE
R0197								SKEEP7 HOLDS LOWEST OF TWO ADDRESSES BEING CHECKED.	
R0198								SKEEP6 HOLDS B(X+1).	
R0199								SKEEP5 HOLDS B(X).	
R0200								SKEEP4 HOLDS C(BANK) DURING ERASLOOP AND CHECKNJ.	

L AGC BLOCK TWO SELF-CH30K

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R0201	SKEEP3 HOLDS LAST ADDRESS BEING CHECKED (HIGHEST ADDRESS).						
R0202	SKEEP2 CONTROLS CHECKING OF NON-SWITCHABLE ERASABLE MEMORY WITH BANK NUMBERS IN EB.						
R0204	ERASCHK TAKES APPROXIMATELY 7 SECONDS						
0205	REP 2 LAST 257	43,3335	3 4712 1	ERASCHK	CA	S+1	
0206	REP 3 LAST 257	43,3336	55<372 1		TS	SKEEP2	
0207	REP 4 LAST 1364	43,3337	3 4714 1	0EBANK	CA	S+ZERO	
0208	REP 51 LAST 1164	43,3340	54 003 0		TS	EBANK	
0209	REP 1	43,3341	3 3232 1		CA	ERASCON3	01461
0210	REP 4 LAST 1364	43,3342	55<377 1		TS	SKEEP7	STARTING ADDRESS
0211	REP 1	43,3343	3 4747 1		CA	S10BITS	01777
0212	REP 3 LAST 257	43,3344	55<373 0		TS	SKEEP3	LAST ADDRESS CHECKED
0213	REP 1	43,3345	0 3365 1		TC	ERASLOOP	
0214	REP 1	43,3346	3 4744 1	E134567B	CA	ERASCON6	01400
0215	REP 5 LAST 1366	43,3347	55<377 1		TS	SKEEP7	STARTING ADDRESS
0216	REP 2 LAST 1366	43,3350	3 4747 1		CA	S10BITS	01777
0217	REP 4 LAST 1366	43,3351	55<373 0		TS	SKEEP3	LAST ADDRESS CHECKED
0218	REP 2 LAST 1366	43,3352	0 3365 1		TC	ERASLOOP	
0219	REP 2 LAST 1366	43,3353	3 4744 1	2EBANK	CA	ERASCON6	01400
0220	REP 6 LAST 1366	43,3354	55<377 1		TS	SKEEP7	STARTING ADDRESS
0221	REP 1	43,3355	3 3233 0		CA	ERASCON4	01773
0222	REP 5 LAST 1366	43,3356	55<373 0		TS	SKEEP3	LAST ADDRESS CHECKED
0223	REP 3 LAST 1366	43,3357	0 3365 1		TC	ERASLOOP	
0224	REP 4 LAST 1366	43,3360	55<372 1	NOEBANK	TS	SKEEP2	+0
0225	REP 1	43,3361	3 3230 0		CA	ERASCON1	00061
0226	REP 7 LAST 1366	43,3362	55<377 1		TS	SKEEP7	STARTING ADDRESS
0227	REP 1	43,3363	3 3231 1		CA	ERASCON2	01373
0228	REP 6 LAST 1366	43,3364	55<373 0		TS	SKEEP3	LAST ADDRESS CHECKED
0229		43,3365	0 0004 0	ERASLOOP	INHINT		
0230	REP 52 LAST 1366	43,3366	3 0003 1		CA	EBANK	
0231	REP 3 LAST 162	43,3367	55<374 1		TS	SKEEP4	
0232		43,3370	0 0006 1			EXTEND	
0233	REP 8 LAST 1366	43,3371	5 1377 0		NDX	SKEEP7	
0234		43,3372	3 0001 0		DCA	0000	
0235	REP 4 LAST 1364	43,3373	53<376 0		DXCH	SKEEP5	
0236	REP 9 LAST 1366	43,3374	3 1377 0		CA	SKEEP7	
0237	REP 6 LAST 1364	43,3375	55<380 1		TS	ERESTORE	
0238	REP 213 LAST 1294	43,3376	54 001 1		TS	L	
0239	REP 214 LAST 1366	43,3377	24 001 0		INCR	L	
0240	REP 347 LAST 1365	43,3400	50 000 1		NDX	A	
0241		43,3401	52 001 1		DXCH	0000	PUTS OWN ADDRESS IN X AND X +1
0242	REP 10 LAST 1366	43,3402	51<377 0		NDX	SKEEP7	
0243		43,3403	4 0001 1		CS	0001	CS X+1
0244	REP 11 LAST 1366	43,3404	51<377 0		NDX	SKEEP7	
0245		43,3405	6 0000 1		AD	0000	AD X
0246	REP 1	43,3406	0 3271 0		TC	-1CHK	
0247	REP 9 LAST 1366	43,3407	3 1360 0		CA	ERESTORE	HAS ERASABLE BEEN RESTORED

## L ACC BLOCK TWO SELF-CHECK

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0248		43,3410	0 0006 1	EXTEND		
0249	REP 1	43,3411	1 3435 1	B2P	ELOOPPIN	YES, EXIT ERASLOOP.
0250		43,3412	0 0006 1	EXTEND		
0251	REP 12 LAST 1366	43,3413	5 1377 0	NDX	SKEEP7	COMPLEMENT OF ADDRESS OF X AND X+1
0252		43,3414	4 0001 1	DCS	0000	
0253	REP 13 LAST 1367	43,3415	51<377 0	NDX	SKEEP7	PUT COMPLEMENT OF ADDRESS OF X AND X+1
0254		43,3416	52 001 1	DXCH	0000	
0255	REP 14 LAST 1367	43,3417	51<377 0	NDX	SKEEP7	C S X
0256		43,3420	4 0000 0	CS	0000	
0257	REP 15 LAST 1367	43,3421	51<377 0	NDX	SKEEP7	AD X+1
0258		43,3422	6 0001 0	AD	0001	
0259	REP 2 LAST 1366	43,3423	0 3271 0	TC	-1CHK	HAS ERASABLE BEEN RESTORED
0260	REP 10 LAST 1366	43,3424	3 1360 0	CA	ERESTORE	YES, EXIT ERASLOOP.
0261		43,3425	0 0008 1	EXTEND		
0262	REP 2 LAST 1367	43,3426	1 3435 1	B2P	ELOOPPIN	
0263		43,3427	0 0008 1	EXTEND		
0264	REP 5 LAST 1366	43,3430	3 1376 1	DCA	SKEEP5	
0265	REP 16 LAST 1367	43,3431	51<377 0	NDX	SKEEP7	PUT B(X) AND B(X+1) BACK INTO X AND X+1
0266		43,3432	52 001 1	DXCH	0000	
0267	REP 5 LAST 1366	43,3433	3 4714 1	CA	S+ZERO	IF RESTART, DO NOT RESTORE C(X), C(X+1)
0268	REP 11 LAST 1367	43,3434	55<360 1	TS	ERESTORE	
0269		43,3435	0 0003 1	ELOOPPIN	RELINT	CHECK FOR NEW JOB REPLACES B(BANK)
0270	REP 2 LAST 1365	43,3436	0 3330 1	TC	CHECKNJ	
0271	REP 4 LAST 1366	43,3437	3 1374 0	CA	SKEEP4	
0272	REP 53 LAST 1366	43,3440	54 003 0	TS	EBANK	
0273	REP 17 LAST 1367	43,3441	25<377 0	INCR	SKEEP7	
0274	REP 18 LAST 1367	43,3442	4 1377 1	CS	SKEEP7	
0275	REP 7 LAST 1366	43,3443	6 1373 1	AD	SKEEP3	
0276		43,3444	0 0008 1	EXTEND		
0277		43,3445	1 3447 1	B2P	+2	GO TO NEXT ADDRESS IN SAME BANK
0278	REP 4 LAST 1366	43,3446	0 3365 1	TC	ERASLOOP	
0279	REP 5 LAST 1366	43,3447	11<372 1	CCS	SKEEP2	PUT +1 IN SKEEP2.
0280	REP 1	43,3450	0 3360 1	TC	NOBANK	
0281	REP 8 LAST 1367	43,3451	25<372 0	INCR	SKEEP2	
0282	REP 54 LAST 1367	43,3452	3 0003 1	CA	EBANK	
0283	REP 1	43,3453	6 4702 0	AD	SBIT9	
0284	REP 55 LAST 1367	43,3454	54 003 0	TS	EBANK	
0285	REP 1	43,3455	6 3241 0	AD	ERASCONS	T6777, CHECK FOR BANK E2
0286		43,3456	0 0008 1	EXTEND		
0287	REP 1	43,3457	1 3353 0	B2P	2ERANK	
0288	REP 56 LAST 1367	43,3460	10 003 0	CCS	EBANK	GO TO BANKS 1,3,4,5,6, AND 7
0289	REP 1	43,3461	0 3346 0	TC	E134587B	END OF ERASBK
0290	REP 3 LAST 1366	43,3462	3 4744 1	CA	ERASCON6	
0291	REP 57 LAST 1367	43,3463	54 003 0	TS	EBANK	
R0292	CNTROHK PERFORMS A CS OF ALL REGISTERS FROM OCT. 60 THROUGH OCT. 10.					
R0293	INCLUDED ARE ALL COUNTERS, T6-1, CYCLE AND SHIFT, AND ALL RJPT REGISTERS					
0294	REP 1	43,3464	3 4726 0	CNTROHK	CA	CNTROCON 00050
0295	REP 7 LAST 1367	43,3465	55<372 1	CNTRLOOP	TS	SKEEP2
0296	REP 1	43,3466	6 4707 0	AD	SBIT4	+10 OCTAL
0297	REP 348 LAST 1366	43,3467	50 000 1		INDEX A	

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## L AGC BLOCK TWO SELFP-CHECK

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0298		43,3470	4 0000 0	CS	0000	
0299	REP 6 LAST 1367	43,3471	11<372 1	CCS	SKEEP2	
0300	REP 1	43,3472	0 3465 0	TC	CNTRLOOP	
<b>R0301 CYCLSHPT CHECKS THE CYCLE AND SHIFT REGISTERS</b>						
0302	REP 1	43,3473	3 3237 1	CYCLSHPT CA	CONC+S1	25252
0303	REP 42 LAST 1166	43,3474	54 020 1	TS	CYR	C(CYR) = 12525
0304	REP 22 LAST 1156	43,3475	54 022 0	TS	CYL	C(CYL) = 52524
0305	REP 29 LAST 1156	43,3476	54 021 0	TS	SR	C(SR) = 12525
0306	REP 11 LAST 1078	43,3477	54 023 1	TS	EDOP	C(EDOP) = 00125
0307	REP 43 LAST 1368	43,3500	6 0020 0	AD	CYR	37777 C(CYR) = 45252
0308	REP 23 LAST 1368	43,3501	6 0022 1	AD	CYL	00-12524 C(CYL) = 25251
0309	REP 30 LAST 1368	43,3502	6 0021 1	AD	SR	00-25251 C(SR) = 05252
0310	REP 12 LAST 1368	43,3503	6 0023 0	AD	EDOP	00-25376 C(EDOP) = +0
0311	REP 1	43,3504	6 3240 1	AD	CONC+S2	C(CONC+S2) = 52400
0312	REP 3 LAST 1367	43,3505	0 3271 0	TC	-1CHK	
0313	REP 44 LAST 1368	43,3506	6 0020 0	AD	CYR	45252
0314	REP 24 LAST 1368	43,3507	6 0022 1	AD	CYL	72523
0315	REP 31 LAST 1368	43,3510	6 0021 1	AD	SR	77775
0316	REP 13 LAST 1368	43,3511	6 0023 0	AD	EDOP	77775
0317	REP 3 LAST 1368	43,3512	6 4712 1	AD	S+1	77776
0318	REP 4 LAST 1368	43,3513	0 3271 0	TC	-1CHK	
0319	REP 4 LAST 1365	43,3514	25<367 1	INCR	SCOUNT +1	
0320	REP 3 LAST 1365	43,3515	0 3277 0	TC	SMODECHK	
R0321	<b>SKEEP1 HOLDS SUM</b>					
R0322	<b>SKEEP2 HOLDS PRESENT CONTENTS OF ADDRESS IN ROPECHK AND SHOWSUM ROUTINES</b>					
R0323	<b>SKEEP2 HOLDS BANK NUMBER IN LOW ORDER BITS DURING SHOWSUM DISPLAY</b>					
R0324	<b>SKEEP3 HOLDS PRESENT ADDRESS (00000 TO 01777 IN COMMON FIXED BANKS). (04000 TO 07777 IN FPX BANKS)</b>					
R0325	<b>SKEEP3 HOLDS BUGGER WORD DURING SHOWSUM DISPLAY</b>					
R0326	<b>SKEEP4 HOLDS BANK NUMBER AND SUPER BANK NUMBER</b>					
R0327	<b>SKEEP5 COUNTS 2 SUCCESSIVE TC SELFP WORDS</b>					
R0328	<b>SKEEP6 CONTROLS ROPECHK OR SHOWSUM OPTION</b>					
R0329	<b>SKEEP7 CONTROLS WHEN ROUTINE IS IN COMMON FIXED OR FIXED FIXED BANKS</b>					
0331	REP 1	43,3516	3 4713 0	ROPECHK CA	S-ZERO	*
03311	REP 4 LAST 257	43,3517	55<376 0	TS	SKEEP6	* -0 FOR ROPECHK.
03312	REP 6 LAST 1367	43,3520	3 4714 1	STSHOSUM CA	S+ZERO	* SHOULD BE ROPECHK
0332	REP 5 LAST 1367	43,3521	55<374 1	TS	SKEEP4	BANK NUMBER
0333	REP 4 LAST 1368	43,3522	3 4712 1	CA	S+1	
0334	REP 19 LAST 1367	43,3523	55<377 1	COMMIX TS	SKEEP7	
0335	REP 7 LAST 1368	43,3524	3 4714 1	CA	S-ZERO	
0336	REP 12 LAST 1365	43,3525	55<371 1	TS	SKEEP1	
0337	REP 8 LAST 1367	43,3526	55<373 0	TS	SKEEP3	
0338	REP 5 LAST 1368	43,3527	3 4712 1	CA	S+1	
0339	REP 8 LAST 1367	43,3530	55<375 0	TS	SKEEP5	COUNTS DOWN 2 TC SELFP WORDS
0340	REP 6 LAST 1368	43,3531	3 1374 0	COMADR CA	SKEEP4	
0341	REP 215 LAST 1366	43,3532	54 001 1	TS	L	TO SET SUPER BANK

## L AGC BLOCK TWO SELF-CHECK

0342	REP	7	LAST	1364	43,3533	T	4364 0	MASK	HIS	
0343	REP	9	LAST	1368	43,3534	6	1373 1	AD	SKEEP3	
0344	REP	2	LAST	352	43,3535	0	4610 1	TC	SUPDACL	SUPER DATA CALL
0345	REP	1			43,3536	0	3561 0	TC	ADSUM	
0346	REP	1			43,3537	6	4700 1	AD	SBIT11	02000
0347	REP	1			43,3540	0	3572 1	TC	ADRSCHK	
0348	REP	349	LAST	1367	43,3541	4	0000 0	FXPX	CS	A
0349	REP	20	LAST	1366	43,3542	55	377 1	TS	SKEEP7	
0350					43,3543	0	0006 1	EXTEND		
0351					43,3544	1	3547 0	BZF	+3	
0352	REP	1			43,3545	3	4677 0	CA	SBIT12	04000, STARTING ADDRESS OF BANK 02
0353					43,3546	0	3550 1	TC	+2	
0354	REP	1			43,3547	3	4755 1	CA	SENKO3	06000, STARTING ADDRESS OF BANK 03
0355	REP	10	LAST	1369	43,3550	55	373 0	TS	SKEEP3	
0356	REP	6	LAST	1366	43,3551	3	4714 1	CA	S+ZERO	
0357	REP	13	LAST	1368	43,3552	55	371 1	TS	SKEEP1	
0358	REP	6	LAST	1366	43,3553	3	4712 1	CA	S+1	
0359	REP	7	LAST	1366	43,3554	55	375 0	TS	SKEEP5	COUNTS DOWN 2 TC SELF WORDS
0360	REP	11	LAST	1369	43,3555	51	373 1	FXADRS	INDEX	SKEEP3
0361					43,3556	3	0000 1	CA	0000	
0362	REP	2	LAST	1369	43,3557	0	3561 0	TC	ADSUM	
0363	REP	2	LAST	1369	43,3560	0	3572 1	TC	ADRSCHK	
0364	REP	9	LAST	1368	43,3561	55	372 1	ADSUM	TS	SKEEP2
0365	REP	14	LAST	1369	43,3562	6	1371 0	AD	SKEEP1	
0366	REP	15	LAST	1369	43,3563	55	371 1	TS	SKEEP1	
0367	REP	9	LAST	1369	43,3564	3	4714 1	CAP	S+ZERO	
0368	REP	16	LAST	1369	43,3565	6	1371 0	AD	SKEEP1	
0369	REP	17	LAST	1369	43,3566	55	371 1	TS	SKEEP1	
0370	REP	10	LAST	1369	43,3567	4	1372 1	CS	SKEEP2	
0371	REP	12	LAST	1369	43,3570	6	1373 1	AD	SKEEP3	
0372	REP	305	LAST	1365	43,3571	0	0002 0	TC	O	
0373	REP	350	LAST	1369	43,3572	22	000 1	ADRSCHK	LXCH	A
0374	REP	13	LAST	1369	43,3573	3	1373 1	CA	SKEEP3	
0375	REP	20	LAST	1364	43,3574	7	4747 0	MASK	LOW10	RELATIVE ADDRESS
0376	REP	1			43,3575	6	4364 1	AD	-MAXADRS	SUBTRACT MAX RELATIVE ADDRESS = 1777.
0377					43,3576	0	0008 1	EXTEND		
0378	REP	1			43,3577	1	3666 0	BZF	SOPTION	CHECKSUM FINISHED IF LAST ADDRESS.
0379	REP	6	LAST	1369	43,3600	11	375 0	CCS	SKEEP5	IS CHECKSUM FINISHED
0380					43,3601	0	3604 0	TC	+3	NO
0381					43,3602	0	3604 0	TC	+2	NO
0382	REP	2	LAST	1369	43,3603	0	3688 1	TC	SOPTION	GO TO ROPECHK SHOWSUM OPTION.
0383	REP	216	LAST	1368	43,3604	10	001 1	CCS	L	-0 MEANS A TC SELF WORD.
0384	REP	1			43,3605	0	3614 1	TC	CONTINU	
0385	REP	2	LAST	1369	43,3606	0	3614 1	TC	CONTINU	
0386	REP	3	LAST	1369	43,3607	0	3614 1	TC	CONTINU	
0387	REP	9	LAST	1369	43,3610	11	375 0	CCS	SKEEP5	
0388	REP	4	LAST	1369	43,3611	0	3615 0	TC	CONTINU	+1

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## L AGC BLOCK TWO SELF-CHECK

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0389	REP	1	LAST 1369	43,3612	3 7716 0		CA	S-1	
0390	REP	5	LAST 1369	43,3613	0 3615 0		TC	CONTINU +1	
0391	REP	7	LAST 1369	43,3614	3 4712 1	CONTINU	CA	S+1	AD IN THE BUGGER WORD MAKE SURE TWO CONSECUTIVE TC SELF WORDS
0392	REP	10	LAST 1369	43,3615	55=375 0		TS	SKEEP5	*
03921	REP	5	LAST 1368	43,3616	11=376 0		CC3	SKEEP6	*
03922	REP	21	LAST 1190	43,3617	10 067 1		CC3	NEWJOB	* +1, SHOWSUM
03923	REP	4	LAST 828	43,3620	0 5057 0		TC	CHANG1	*
03924				43,3621	0 3623 0		TC	+2	*
0393	REP	3	LAST 1367	43,3622	0 3330 1		TC	CHECKNJ	-0 IN SKEEP6 FOR ROPECHK
0394	REP	14	LAST 1369	43,3623	25=373 1	ADRS+1	INCR	SKEEP3	
0395	REP	21	LAST 1369	43,3624	11=377 1		CCS	SKEEP1	
0396	REP	1		43,3625	0 3531 0		TC	COMADRS	
0397	REP	2	LAST 1370	43,3626	0 3531 0		TC	COMADRS	
0398	REP	1		43,3627	0 3555 1		TC	PXADRS	
0399	REP	2	LAST 1370	43,3630	0 3555 1		TC	PXADRS	
0400	REP	7	LAST 1368	43,3631	4 1374 1	NXTBNK	CS	SKEEP4	
0401	REP	1		43,3632	6 3721 0		AD	LSTBNKCH	LAST BANK TO BE CHECKED
0402				43,3633	0 0006 1		EXTEND		
0403	REP	1		43,3634	1 3000 0		B2P	ENDSUMS	END OF SUMMING OF BANKS.
0404	REP	8	LAST 1370	43,3635	3 1374 0		CA	SKEEP4	
0405	REP	2	LAST 1369	43,3636	6 4700 1		AD	SBIT11	
0406	REP	9	LAST 1370	43,3637	55=374 1		TS	SKEEP4	37 TO 40 INCRMTS SKEEP4 BY END RND CARRY
0407	REP	1		43,3640	0 3644 1		TC	CHKSUPR	
0408	REP	1		43,3641	3 4674 0	17TO20	CA	SBIT15	
0409	REP	10	LAST 1370	43,3642	27=374 1		ADS	SKEEP4	
0410	REP	1		43,3643	0 3660 1		TC	GONXBNK	SET FOR BANK 20
0411	REP	8	LAST 1369	43,3644	7 4384 0	CHKSUPR	MASK	H15	
0412				43,3645	0 0006 1		EXTEND		
0413	REP	1		43,3646	1 3656 0		B2P	NXTSUPR	INCREMENT SUPER BANK
0414	REP	1		43,3647	6 3236 0	27TO30	AD	S13BITS	
0415				43,3650	0 0006 1		EXTEND		
0416				43,3651	1 3653 0		B2P	+2	
0417	REP	2	LAST 1370	43,3652	0 3660 1		TC	GONXBNK	BANK SET FOR 30
0418	REP	1		43,3653	3 3234 1		CA	SIXTY	
0419	REP	11	LAST 1370	43,3654	27=374 1		ADS	SKEEP4	FIRST SUPER BANK
0420	REP	3	LAST 1370	43,3655	0 3660 1		TC	GONXBNK	
0421	REP	1		43,3656	6 3235 0	NXTSUPR	AD	SUPRCN	
0422	REP	12	LAST 1370	43,3657	27=374 1		ADS	SKEEP4	SET BNK 30 + INCR SUPR BNK AND CANCEL, ERC BIT OF THE 37 TO 40 ADVANCE.
0423	REP	22	LAST 1370	43,3660	11=377 1	GONXBNK	CCS	SKEEP7	
0424	REP	1		43,3661	0 3523 0		TC	COMMPC	
0425	REP	8	LAST 1370	43,3662	3 4712 1		CA	S+1	
0426	REP	1		43,3663	0 3541 1		TC	PXPX	
0427	REP	1		43,3664	3 4704 0		CA	SBIT7	HAS TO BE LARGER THAN NO OF PXPX BANKS.
0428	REP	2	LAST 1370	43,3665	0 3523 0		TC	COMMPC	
0429	REP	13	LAST 1370	43,3666	3 1374 0	SOPTION	CA	SKEEP4	
0430	REP	9	LAST 1370	43,3667	7 4384 0		MASK	H15	
0431	REP	5	LAST 349	43,3670	0 4345 1		TC	LEFTS	= BANK BITS

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L AGC BLOCK TWO SELF-CHECK

0432	REP 217	LAST 1389	43,3671	54 001 1	T3	L	BANK NUMBER BEFORE SUPER BANK
0433	REP 14	LAST 1370	43,3672	3 1374 0	CA	SKEEP4	= SUPER BANK BITS
0434	REP 1		43,3673	7 4373 0	MASK	S8BITS	
0435			43,3674	0 0006 1	EXTEND		
0436	REP 1		43,3675	1 3703 1	BZP	SOPT	BEFORE SUPER BANK
0437	REP 32	LAST 1368	43,3676	54 021 0	TS	SR	SUPER BANK NECESSARY
0438	REP 218	LAST 1371	43,3677	3 0001 0	CA	L	
0439	REP 19	LAST 1384	43,3700	7 4716 1	MASK	SEVEN	
0440	REP 33	LAST 1371	43,3701	6 0021 1	AD	SR	
0441	REP 219	LAST 1371	43,3702	54 001 1	TS	L	BANK NUMBER WITH SUPER BANK
0442	REP 6	LAST 1370	43,3703	3 1376 1	CA	SKEEP6	*
0443			43,3704	0 0006 1	EXTEND		*
0444			43,3705	1 3707 0	BZP	+2	* ON -0 CONTINUE WITH ROPE CHECK.
0445	REP 1		43,3706	0 2762 0	TC	SDISPLAY	* ON +1 GO TO DISPLAY OF SUM.
0446	REP 18	LAST 1389	43,3707	11<371 1	CCS	SKEEP1	FORCE SUM TO ABSOLUTE VALUE.
04481			43,3710	0 3712 0	TC	+2	
04462			43,3711	0 3713 1	TC	+2	
04463	REP 9	LAST 1370	43,3712	6 4712 1	AD	S-1	
04484	REP 19	LAST 1371	43,3713	55<371 1	TS	SKEEP1	
0447	REP 220	LAST 1371	43,3714	4 0001 1	BNKCHK	CS	= - BANK NUMBER
0448	REP 20	LAST 1371	43,3715	6 1371 0	AD	SKEEP1	
0449	REP 2	LAST 1370	43,3718	6 7716 0	AD	S-1	
0450	REP 5	LAST 1368	43,3717	0 3271 0	TC	-1CHK	CHECK SUM
0451	REP 2	LAST 257	43,3720	0 3631 0	TC	NXTBNK	
0454	REP 22	LAST 1370	0067			BRANK= NEWJOB	
0455			43,3721	66100 0	LSTBNK	BBCON*	* CONSTANT, LAST BANK.

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L PHASE TABLE MAINTENANCE

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P0001 SUBROUTINE TO UPDATE THE PROGRAM NUMBER DISPLAY ON THE DSKY.

0002	REF	2 LAST 215 TO 216'	20 20*	COUNT	02/PHASE	
0003			5243		BLOCK 02	
0004	REF	2 LAST 215	4000		SETLOC PPTAG1	
0005			5243		BANK	
0006	REF	306 LAST 1369	5243 50 002 0	NEWMODEX	INDEX Q	UPDATE MODREG. ENTRY FOR MODE IN FIXED.
0007			5244 3 0000 1	CAP	0	
0008	REF	307 LAST 1372	5245 24 002 0	INCR	0	
0009	REF	15 LAST 1306	5246 55=011 1	NEWMODEA	T3 MODREG	ENTRY FOR MODE IN A.
0014			5247 3 5252 1	MDSPLAY	CAP +3	DISPLAY MAJOR MODE.
0015	REF	31 LAST 1287	5250 22 006 1	PREBUMP	LXCH BBANK	PUTS BBANK IN L
0016	REF	6 LAST 1299	5251 1 4577 1	TOP	BANKJUMP	PUTS Q INTO A
0017	REF	1	5252 20344 0	CADR	SETUPDSP	
R0018						RETURN TO CALLER +3 IF MODE = THAT AT CALLER +1. OTHERWISE RETURN TO CALLER +2.
0020	REF	308 LAST 1372	5253 50 002 0	CHECKMM	INDEX Q	
0021			5254 4 0000 0	CS	0	
0022	REF	16' LAST 1372	5255 6 1011 0	AD	MODREG	
0023			5256 0 0006 1	EXTEND		
0024	REF	2 LAST 1180	5257 1 6710 0	BZF	Q+2	
0025	REF	3 LAST 244	5260 1 6706 1	TCF	Q+1	NO MATCH
0026	REF	3 LAST 1372	6711	TCQ	= Q+2 +1	
0027			14,3744		BANK 14	
0028	REF	1	10,2000		SETLOC PHASETAB	
0029			10,2344		BANK	
0030	REF	1		COUNT	10/PHASE	
0031			10,2344 0 0004 0	SETUPDSP	INHINT	
0032	REF	25 LAST 762	10,2345 52 071 0	DXCH	RUPTREG1	SAVE CALLER-S RETURN 2CADR
0033	REF	14 LAST 1174	10,2346 3 4371 0	CAF	PRI030	EITHER A TASK OR JOB CAN COME TO
0034	REF	31 LAST 1195	10,2347 0 5027 1	TC	NOVAC	NEWMODEX
0035	REF	17 LAST 1372	1011	BBANK=	MODREG	
0036	REF	1	10,2350 03435 0	2CADR	DSPMMJOB	
0036	REF	1	10,2351 60102 1			
0037	REF	28 LAST 1372	10,2352 52 071 0	DXCH	RUPTREG1	
0038			10,2353 0 0003 1	RELINT		
0039	REF	16 LAST 783	10,2354 52 006 0	DXCH	Z	RETURN
0040	REF	2 LAST 369	40,3435	DSPMMJOB	EQUALS DSPMMJB	
0041			5261	BLOCK	02	

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0042 REP 3 LAST 1372 4000  
0043 5261

SETLOC PPTAG1  
BANK

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L PHASE TABLE MAINTENANCE

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R0044 PHASCHNG IS THE MAIN WAY OF MAKING PHASE CHANGES FOR RESTARTS. THERE ARE THREE FORMS OF PHASCHNG, KNOWN AS TYPE  
R0045 A, TYPE B, AND TYPE C. THEY ARE ALL CALLED AS FOLLOWS, WHERE OCT XXXXX CONTAINS THE PHASE INFORMATION,

A0048 TC PHASCHNG  
A0049 OCT XXXXX

R0050 TYPE A IS CONCERNED WITH FIXED PHASE CHANGES, THAT IS, PHASE INFORMATION THAT IS STORED PERMANENTLY. THESE  
R0052 OPTIONS ARE, WHERE G STANDS FOR A GROUP AND .X FOR THE PHASE,

R0053 G.0 INACTIVE, WILL NOT PERMIT A GROUP G RESTART  
R0055 G.1 WILL CAUSE THE LAST DISPLAY TO BE REACTIVATED, USED MAINLY IN MANNED FLIGHTS  
R0057 G.EVEN A DOUBLE TABLE RESTART, CAN CAUSE ANY COMBINATION OF TWO JOBS, TASKS, AND/OR  
R0059 LONGCALL TO BE RESTARTED.  
R0060 G.ODD NOT .1 A SINGLE TABLE RESTART, CAN CAUSE EITHER A JOB, TASK, OR LONGCALL RESTART

R0062 THIS INFORMATION IS PUT INTO THE OCTAL WORD AFTER TC PHASCHNG AS FOLLOWS

R0063 TLO 00P PPP PPP GGG

R0065 WHERE EACH LETTER OR NUMBER STANDS FOR A BIT. THE G'S STAND FOR THE GROUP, OCTAL 1 - 7, THE P'S FOR THE PHASE,  
R0067 OCTAL 0 - 127: 0'S MUST BE 0. IF ONE WISHES TO HAVE THE BASE OF GROUP G TO BE SET AT THIS TIME,  
R0069 T IS SET TO 1, OTHERWISE IT IS SET TO 0. SIMILARLY IF ONE WISHES TO SET LONGBASE, THEN L IS SET TO 1, OTHERWISE  
R0071 IT IS SET TO 0. SOME EXAMPLES,

A0072	TC	PHASCHNG	
A0073	OCT	00003	THIS WILL CAUSE GROUP 3 TO BE SET TO 0, MAKING GROUP 3 INACTIVE
A0074	TC	PHASCHNG	
A0075	OCT	00012	IF A RESTART OCCURS THIS WOULD CAUSE GROUP 2 TO RESTART THE LAST DISPLAY
A0076	TC	PHASCHNG	
A0077	OCT	40084	THIS SETS THE BASE OF GROUP 4 AND IN CASE OF A RESTART WOULD START UP THE TWO THINGS LOCATED IN THE DOUBLE 4.8 RESTART LOCATION
A0078	TC	PHASCHNG	
A0079	OCT	40084	THIS SETS LONGBASE AND UPON A RESTART CAUSES 5.13 TO BE RESTARTED (SINCE LONGBASE WAS SET THIS SINGLE ENTRY SHOULD BE A LONGCALL)
A0080	TC	PHASCHNG	
A0081	OCT	20135	SINCE BOTH BASE4 AND LONGBASE ARE SET, 4.12 SHOULD CONTAIN BOTH A TASK AND A LONGCALL TO BE RESTARTED
A0082	TC	PHASCHNG	
A0083	OCT	60124	
A0084	TC	PHASCHNG	
A0085	OCT	60124	
A0086	TC	PHASCHNG	

R0087 TYPE C PHASCHNG CONTAINS THE VARIABLE TYPE OF PHASCHNG INFORMATION. INSTEAD OF THE INFORMATION BEING IN A  
R0089 PERMANENT FORM, ONE STORES THE DESIRED RESTART INFORMATION IN A VARIABLE LOCATION. THE BITS ARE AS FOLLOWS,

R0091 TLO 1AD XXX CJW GGG

R0092 WHERE EACH LETTER OR NUMBER STANDS FOR A BIT. THE G'S STAND FOR THE GROUP, OCTAL 1 - 7. IF THE RESTART IS TO  
R0094 BE BY WAITLIST, W IS SET TO 1, IF IT IS A JOB, J IS SET TO 1, IF IT IS A LONGCALL, C IS SET TO 1. ONLY ONE OF  
R0098 THESE THREE BITS MAY BE SET. X'S ARE IGNORED 1 MUST BE 1, AND 0 MUST BE 0. AGAIN T STANDS FOR THE BASE,

## L PHASE TABLE MAINTENANCE

R0098 AND L FOR LONGBASE. THE BITS A AND D ARE CONCERNED WITH THE VARIABLE INFORMATION. IF D IS SET TO 1, A PRIORITY  
 R0100 OR DELTA TIME WILL BE READ FROM THE NEXT LOCATION AFTER THE OCTAL INFORMATION, IF THIS IS TO BE INDIRECT, THAT  
 R0102 IS, THE NAME OF A LOCATION CONTAINING THE INFORMATION (DELTA TIME ONLY), THEN THIS IS GIVEN AS THE -GENADR OF  
 R0104 THAT LOCATION WHICH CONTAINS THE DELTA TIME. IF THE OLD PRIORITY OR DELTA TIME IS TO BE USED, THAT WHICH IS  
 R0106 ALREADY IN THE VARIABLE STORAGE, THEN D IS SET TO 0. NEXT THE A BIT IS USED. IF IT IS SET TO 0, THE ADDRESS  
 R0108 THAT WOULD BE RESTARTED DURING A RESTART IS THE NEXT LOCATION AFTER THE PHASE INFORMATION, THAT IS, EITHER  
 R0110 (TC PHASCHNG) +2 OR +3, DEPENDING ON WHETHER D HAD BEEN SET OR NOT. IF A IS SET TO 1, THEN THE ADDRESS THAT  
 R0112 WOULD BE RESTARTED IS THE 2CADR THAT IS READ FROM THE NEXT TWO LOCATIONS. EXAMPLES,

	AD	TC	PHASCHNG	
A0114	AD+1	OCT	05023	THIS WOULD CAUSE LOCATION AD +3 TO BE
A0115	AD+2	OCT	23000	RESTARTED BY GROUP THREE WITH A PRIORITY
A0116	AD+3			OF 23. NOTE UPON RETURNING IT WOULD
A0117				ALSO GO TO AD+3
A0118	AD	TC	PHASCHNG	GROUP 1 WOULD CAUSE CALLCALL TO
A0119	AD+1	OCT	27441	BE STARTED AS A LONGCALL FROM THE TIME
A0120	AD+2	-GENADR	DELTIME	STORED IN LONGBASE (LONGBASE WAS SET) BY
A0121	AD+3	2CADR	CALLCALL	A DELTATIME STORED IN DELTIME. THE
A0122	AD+4			BBCON OF THE 2CADR SHOULD CONTAIN THE E
A0123	AD+5			LOCATION AD+5
A0124				

R0125 NOTE THAT IF A VARIABLE PRIORITY IS GIVEN FOR A JOB, THE JOB WILL BE RESTARTED AS A NOVAC IF THE PRIORITY IS  
 R0127 NEGATIVE, AS A FINDVAC IF THE PRIORITY IS POSITIVE.  
 R0128 TYPE B PHASCHNG IS A COMBINATION OF VARIABLE AND FIXED PHASE CHANGES. IT WILL START UP A JOB AS INDICATED  
 R0129 BELOW AND ALSO START UP ONE FIXED RESTART, THAT IS EITHER AN G.1 OR A G.ODD OR THE FIRST ENTRY OF G.EVEN  
 R0130 DOUBLE ENTRY. THE BIT INFORMATION IS AS FOLLOWS,  
 R0132

R0133 TL1 DAP PPP PPP GGG

R0134 WHERE EACH LETTER OR NUMBER STANDS FOR A BIT. THE G'S STAND FOR THE GROUP, OCTAL 1 - 7. THE P'S FOR THE FIXED  
 R0136 PHASE INFORMATION, OCTAL 0 - 127. 1 MUST BE 1. AND AGAIN T STANDS FOR THE THASE AND L FOR LONGTHASE. D THIS  
 R0138 TIME STANDS ONLY FOR PRIORITY SINCE THIS WILL BE CONSIDERED A JOB, AND IT MUST BE GIVEN DIRECTLY IF GIVEN.  
 R0140 AGAIN A STANDS FOR THE ADDRESS OF THE LOCATION TO BE RESTARTED, 1 IF THE 2CADR IS GIVEN, OR 0 IF IT IS TO BE  
 R0142 THE NEXT LOCATION. (THE RETURN LOCATION OF PHASCHNG) EXAMPLES,

	AD	TC	PHASCHNG	
A0143	AD+1	OCT	58043	THASE IS SET AND RESTART CAUSE GROUP 3
A0144	AD+2	OCT	31000	TO START THE JOB AJOBAJOB WITH PRIORITY
A0145	AD+3	2CADR	AJOB AJOB	31 AND THE FIRST ENTRY OF 3.4SPOT(WE CAN
A0146	AD+4			ASSUME IT IS A TASK SINCE WE SET THASE3)
A0147	AD+5			UPON RETURN FROM PHASCHNG CONTROL WOULD
A0148				GO TO AD+5
A0149	AD	TC	PHASCHNG	UPON A RESTART THE LAST DISPLAY WOULD BE
A0150	AD+1	OCT	10015	RESTARTED AND A JOB WITH THE PREVIOUSLY
A0151	AD+2			STORED PRIORITY WOULD BE BEGUN AT AD+2
A0152				BY MEANS OF GROUP 5

III  
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L PHASE TABLE MAINTENANCE  
R0153 THE NOVAC-FINDVAC CHOICE FOR JOBS HOLDS HERE ALSO - NEGATIVE PRIORITY CAUSES A NOVAC CALL, POSITIVE A FINDVAC.  
R0155 SUMMARY OF BITS  
R0156 TYPE A TL0 00P PPP PPP 00G  
R0157 TYPE B TL1 DAP PPP PPP 00G  
R0158 TYPE C TL0 1AD XXX CJW 00G

## L PHASE TABLE MAINTENANCE

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P0159 2PHSCHNG IS USED WHEN ONE WISHES TO START UP A GROUP OR CHANGE A GROUP WHILE UNDER THE CONTROL OF A DIFFERENT GROUP. FOR EXAMPLE, CHANGE THE PHASE OF GROUP 3 WHILE THE PORTION OF THE PROGRAM IS UNDER GROUP 5. ALL 2PHSCHNG CALLS ARE MADE IN THE FOLLOWING MANNER,

A0164	TC	2PHSCHNG
A0165	OCT	XXXXX
A0166	OCT	YYYYY

R0167 WHERE OCT XXXXX MUST BE OF TYPE A AND OCT YYYYY MAY BE OF EITHER TYPE A OR TYPE B OR TYPE C. THERE IS ONE  
 R0169 DIFFERENCE --- NOTE- IF LONGBASE IS TO BE SET THIS INFORMATION IS GIVEN IN THE OCT YYYYY INFORMATION, IT WILL  
 R0171 BE DISREGARDED IF GIVEN WITH THE OCT XXXXX INFORMATION. A COUPLE OF EXAMPLES MAY HELP,

A0173	AD	TC	2PHSCHNG	SET TRASE3 AND IF A RESTART OCCURS START
A0174	AD+1	OCT	40083	THE TWO ENTRIES IN 3.8 TABLE LOCATION
A0175	AD+2	OCT	05025	THIS IS OF TYPE C, SET THE JOB TO BE
A0176	AD+3	OCT	18000	TO BE LOCATION AD+4, WITH A PRIORITY 18,
A0177	AD+4			FOR GROUP 5 PHASE INFORMATION

0178	NEP	3 LAST 1372 TO 1372'	14	34*	COUNT	02/PHASE	
0179			5261	0 0004 0	2PHSCHNG	INHINT	THE ENTRY FOR A DOUBLE PHASE CHANGE
0180	REP 309	LAST 1372	5262	50 002 0	NDX	0	
0181			5263	3 0000 1	CA	0	
0182	REP 310	LAST 1377	5264	24 002 0	INCR	0	
0183	REP 1		5265	54 072 0	TS	TEMPP2	
0184	REP 1		5266	7 4716 1	MASK	OCT7	
0185			5267	6 0000 1	DOUBLE		
0186	REP 1		5270	54 071 0	TS	TEMPG2	
0187	REP 2	LAST 1377	5271	3 0072 1	CA	TEMPP2	
0188	REP 1		5272	7 4765 0	MASK	OCT17770	NEED ONLY 1770, BUT WHY GET A NEW CONST.
0189			5273	0 0006 1	EXTEND		
0190	REP 32	LAST 1363	5274	7 4677 1	MP	BIT12	
0191	REP 3	LAST 1377	5275	56 072 1	XCH	TEMPP2	
0192	REP 50	LAST 1363	5276	7 4674 1	MASK	BIT15	
0193	REP 1		5277	54 066 0	TS	TEMPSW2	INDICATES WHETHER TO SET TRASE OR NOT
0194	REP 100	LAST 1317	5300	1 5304 1	TCF	PHASCHNG +3	
0195			5301	0 0004 0	PHASCHNG	INHINT	
0196	REP 157	LAST 1338	5302	3 4712 1	CA	ONE	INDICATESWE CAME FROM A PHASCHNG ENTRY
0197	REP 2	LAST 1377	5303	54 066 0	TS	TEMPSW2	
0198	REP 311	LAST 1377	5304	50 002 0	NDX	0	
0199			5305	3 0000 1	CA	0	
0200	REP 312	LAST 1377	5306	24 002 0	INCR	0	
0201	REP 1		5307	54 065 0	TS	TEMPSW	

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0202		5310 0 0006 1	EXTEND	
0203	REP 1	5311 3 5314 1	DCA ADRPCHN2	OFF TO SWITCHED BANK
0204		5312 52 006 0	DTCB	
0205	REP 47 LAST 1364	E3,1400	BBANK= LST1	
0206	REP 1	5313 02355 0	ADRPCHN2 2CADR PHSCHNG2	
0206	REP 1	5314 20103 1		
0207	REP 1	5315 22 073 0	ONEORTWO LXCH TEMPBBCN	
0208	REP 32 LAST 1372	5316 22 006 1	LXCH BBANK	
0209	REP 2 LAST 1378	5317 22 073 0	LXCH TEMPBBCN	
0210	REP 1	5320 7 4781 1	MASK OCT14000	SEE WHAT KIND OF PHASE CHANGE IT IS
0211	REP 351 LAST 1369	5321 10 000 0	CCS A	
0212	REP 1	5322 1 5363 0	TCP CHECKB	IT IS OF TYPE 'B'
0213	REP 1	5323 3 0062 0	CA TEMPP	
0214	REP 54 LAST 1363	5324 7 4704 1	MASK BIT7	
0215	REP 352 LAST 1378	5325 10 000 0	CCS A	SHALL WE USE THE OLD PRIORITY
0216	REP 1	5326 1 5350 0	TCP GETPRIO	NO GET A NEW PRIORITY (OR DELTA T)
0217	REP 4 LAST 215	5327 50 061 0	OLDPRIO NDX	USE THE OLD PRIORITY (OR DELTA T)
0218	REP 1	5330 3 1052 1	CA PHSPROT1 -2	
0219	REP 1	5331 54 070 1	TS TEMPSSR	
0220	REP 2 LAST 1378	5332 3 0062 0	CON1 CA	SEE IF A 2CADR IS GIVEN
0221	REP 29 LAST 1363	5333 7 4703 0	MASK BIT8	
0222	REP 353 LAST 1378	5334 10 000 0	CCS A	
0223	REP 1	5335 1 5354 1	TCP GETINBNM	
0224	REP 313 LAST 1377	5336 3 0002 0	CA O	
0225	REP 1	5337 54 063 0	TS TEMPNM	
0226	REP 1	5340 3 0006 1	CA B8	
0227		5341 0 0008 1	EXTEND	PICK UP USR'S SUPERBANK
0228	REP 23 LAST 1202	5342 04 007 1	ROR SUPERBANK	
0229	REP 1	5343 54 064 1	TS TEMPSSR	
0230	REP 1	5344 3 5347 1	TOCON2 CA	BACK TO SWITCHED BANK
0231	REP 3 LAST 1378	5345 22 073 0	LXCH CON2ADR	
0232		5346 52 006 0	DTCB TEMPBBCN	
0233	REP 1	5347 02443 0	CON2ADR GENADR CON2	
0234	REP 314 LAST 1378	5350 50 002 0	GETPRIO NDX O	DON'T CARE IF DIRECT OR INDIRECT
0235		5351 3 0000 1	CA O	LEAVE THAT DECISION TO RESTARTS
0236	REP 315 LAST 1378	5352 24 002 0	INCR O	OBTA IN RETURN ADDRESS
0237	REP 1	5353 1 5331 1	TCP CON1 -1	
0238		5354 0 0008 1	GETINBNM EXTEND	

## L PHASE TABLE MAINTENANCE

0239	REP 316	LAST 1378	5355 5 0002 0	INDEX 0
0240			5356 3 0001 0	DCA 0
0241	REP 2	LAST 1378	5357 52 064 1	DXCH TEMPNM
0242	REP 68	LAST 1295	5360 3 4711 1	CA TWO
0243	REP 317	LAST 1379	5361 28 002 1	ADS 0
0244	REP 1		5362 1 5344 0	TCP TOCON2
0245	REP 8	LAST 665	4761	OCT14000 EQUALS PRIO14
0246	REP 13	LAST 1335	0061	TEMPP EQUALS ITEMP1
0247	REP 16	LAST 1335	0062	TEMPP EQUALS ITEMP2
0248	REP 4	LAST 66	0063	TEMPPN4 EQUALS ITEMP3
0249	REP 3	LAST 66	0064	TEMPPB EQUALS ITEMP4
0250	REP 2	LAST 68	0065	TEMPSW EQUALS ITEMP5
0251	REP 3	LAST 154	0066	TEMPSW2 EQUALS ITEMP6
0252	REP 27	LAST 1372	0070	TEMPPR EQUALS RUPTR2G1
0253	REP 6	LAST 145	0071	TEMPPG2 EQUALS RUPTR2G2
0254	REP 5	LAST 1075	0072	TEMPP2 EQUALS RUPTR2G3
0255	REP 5	LAST 1075	0073	TEMPPBCN EQUALS RUPTR2G4
0256	REP 33	LAST 1378	0006	BB EQUALS BBANK
0257			14,3744	BANK 14
0258	REP 2	LAST 1372	10,2000	SETLOC PHASETAB
0259			10,2355	BANK
0260	REP 1		E3,1436	BBANK= PHNAME1
0261	REP 2	LAST 1372 TO 1377	9 9*	COUNT 10/PHASE
0262	REP 4	LAST 1378	10,2355 22 073 0	PHSCHNG2 LXCH TEMPBBCN
0263	REP 2	LAST 1377	10,2356 3 0065 1	CA TEMPSW
0264	REP 2	LAST 1377	10,2357 7 4718 1	MASK OCT7
0265			10,2380 6 0000 1	DOUBLE
0266	REP 5	LAST 1378	10,2381 54 061 1	TS TEMPG
0267	REP 3	LAST 1379	10,2382 3 0065 1	CA TEMPSW
0268	REP 2	LAST 1377	10,2383 7 4765 0	MASK OCT17770
0269			10,2384 0 0006 1	EXTEND
0270	REP 33	LAST 1377	10,2385 7 4677 1	MP BIT12
0271	REP 3	LAST 1378	10,2386 54 062 1	TS TEMPP
0272	REP 4	LAST 1379	10,2387 3 0065 1	CA TEMPSW
0273	REP 14	LAST 904	10,2370 7 4105 0	MASK OCT60000
0274	REP 5	LAST 1379	10,2371 56 085 1	XCH TEMPSW
0275	REP 2	LAST 1378	10,2372 7 4761 1	MASK OCT14000
0276	REP 354	LAST 1378	10,2373 10 000 0	CCS A
0277	REP 1		10,2374 1 5315 1	TCP ONEORTWO

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L PHASE TABLE MAINTENANCE

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0276	REP 4 LAST 1379	10,2375 3 0062 0	CA	TEMPP		
0279	REP 6 LAST 1379	10,2376 50 081 0	NDX	TEMPG		
0280	REP 2 LAST 165	10,2377 54 751 0	TS	PHASE1 -2	START STORING THE PHASE INFORMATION	
0281	REP 3 LAST 1377	10,2400 10 066 0	BELLOW1	CCS	TEMPSW2	
0282	REP 1	10,2401 1 2415 1		TCP	BELLOW2	IS IT A PHASCHNG OR A 2PHASCHNG IT'S A PHASCHNG
0283		10,2402 1 2403 0		TCP	+1	IT'S A 2PHASCHNG
0284	REP 4 LAST 1377	10,2403 4 0072 0	CS	TEMPP2		
0285	REP 5 LAST 1380	10,2404 22 072 1	LXCH	TEMPP2		
0286	REP 2 LAST 1377	10,2405 50 071 1	NDX	TEMPG2		
0287	REP 5 LAST 215	10,2406 52 751 0	LXCH	-PHASE1 -2		
0288	REP 4 LAST 1380	10,2407 10 086 0	CCS	TEMPSW2		
0289		10,2410 12 411 0	NOOP			
0290	REP 2 LAST 1380	10,2411 1 2415 1	TOP	BELLOW2	CAN'T GET HERE	
0291	REP 19 LAST 1071	10,2412 4 0025 1	CS	TIME1		
0292	REP 3 LAST 1360	10,2413 50 071 1	NDX	TEMPG2		
0293	REP 4 LAST 385	10,2414 55=051 0	TS	TBASE1 -2		
0294	REP 6 LAST 1379	10,2415 10 085 0	BELLOW2	CCS	TEMPSW	SEE IF WE SHOULD SET TBASE OR LONGBASE
0295	REP 1	10,2418 1 2431 1		TCP	BELLOW3	SET LONGBASE ONLY
0296	REP 1	10,2417 1 2434 1		TCP	BELLOW4	SET NEITHER
0297	REP 20 LAST 1360	10,2420 4 0025 1	CS	TIME1		
0298	REP 7 LAST 1380	10,2421 50 081 0	NDX	TEMPG	SET TBASE TO BEGIN WITH	
0299	REP 5 LAST 1360	10,2422 55=051 0	TS	TBASE1 -2		
0300	REP 7 LAST 1380	10,2423 3 0085 1	CA	TEMPSW	SHALL WE NOW SET LONGBASE	
0301	REP 1	10,2424 6 2427 1	AD	BIT14COM		
0302	REP 355 LAST 1379	10,2425 10 000 0	CCS	A		
0303		10,2426 12 427 0	NOOP		***** CANT GET HERE *****	
0304		10,2427 17777 0	BIT14COM	OCT	***** CANT GET HERE *****	
0305	REP 2 LAST 1360	10,2430 1 2434 1	TCP	17777	NO WE NEED ONLY SET TBASE	
0306				BELLOW4		
0307	REP 29 LAST 1299	10,2431 0 0006 1	EXTEND		SET LONGBASE	
0308	REP 1	10,2432 3 0025 0	DCA	TIME2		
		10,2433 53=138 0	LXCH	LONGBASE		
0309	REP 5 LAST 1380	10,2434 4 0082 1	BELLOW4	CS	TEMPP	AND STORE THE FINAL PART OF THE PHASE
0310	REP 8 LAST 1380	10,2435 50 081 0	NDX	TEMPG		
0311	REP 6 LAST 1380	10,2438 54 750 1	TS	-PHASE1 -2		
0312	REP 318 LAST 1379	10,2437 3 0002 0	CA	O		
0313	REP 5 LAST 1379	10,2440 22 073 0	LXCH	TEMPBCN		
0314		10,2441 0 0003 1		REL INT		
0315		10,2442 52 006 0		DTCB		
0316	REP 6 LAST 1380	10,2443 22 073 0	CON2	LXCH	TEMPBCN	

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USER#S PAGE NO. 10 E3 S4

L PHASE TABLE MAINTENANCE

0317	REF	8	LAST 1380	10,2444	3 0082 0	CA	TEMPP
0318	REF	9	LAST 1380	10,2445	50 061 0	NDX	TEMPG
0319	REF	3	LAST 1380	10,2446	54 751 0	TS	PHASE1 -2
0320	REF	2	LAST 1378	10,2447	3 0070 0	CA	TEMPPR
0321	REF	10	LAST 1381	10,2450	50 061 0	NDX	TEMPG
0322	REF	2	LAST 1378	10,2451	55=052 0	TS	PHSPROT1 -2
0323				10,2452	0 0006 1	EXTEND	
0324	REF	3	LAST 1379	10,2453	3 0064 0	DCA	TEMPNM
0325	REF	11	LAST 1381	10,2454	50 061 0	NDX	TEMPG
0326	REF	2	LAST 1379	10,2455	53=435 0	DXCH	PHNAME1 -2
0327	REF	1		10,2456	1 2400 0	TOP	BELOW1
0328				5363		BLOCK	02
0329	REF	4	LAST 1373	4000		SETLOC	PTTAG1
0330				5363		BANK	
0331	REF	4	LAST 1377 TO 1379	66	100*	COUNT	02/PHASE
0332	REF	34	LAST 1379	5363	7 4677 1	CHECK3	MASK BIT12
0333	REF	356	LAST 1380	5364	10 000 0	CCS A	
0334	REF	2	LAST 1378	5365	1 5350 0	TCP QTPRIO	
0335	REF	1		5366	1 5327 0	TOP	OLDPRI0

SINCE THIS IS OF TYPE B, THIS BIT SHOULD  
BE HERE IF WE ARE TO GET A NEW PRIORITY

IT IS, SO GET NEW PRIORITY

IT ISN'T, USE THE OLD PRIORITY

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L	RESTARTS ROUTINE				USER#S PAGE NO.	1	E0 54
0001		01,3520	BANK 01				
0002	REP 2 LAST 206	01,2000	SETLOC RESTART				
0003		01,3520	BANK				
0004	REP 3 LAST 1381	E3,1436	EBANK= PHSNAME1		OPROG MUST SWITCH TO THIS EBANK		
0005	REP 1		COUNT 01/RSRQ				
0006	REP 688 LAST 1338	01,3520 3 0181 1	RESTARTS CA	MPAC +5	GET GROUP NUMBER -1		
0007		01,3521 6 0000 1	DOUBLE		SAVE FOR INDEXING		
0008	REP 1	01,3522 54 155 1	TS TEMP2G				
0009	REP 1	01,3523 3 3782 1	CA PHS2ADDR		SET UP EXIT IN CASE IT IS AN EVEN		
0010	REP 1	01,3524 54 157 0	TS TEMPSWCH		TABLE PHASE		
0011	REP 1	01,3525 3 3557 0	CA RTRNCADR		TO SAVE TIME ASSUME IT WILL GET NEXT		
0012	REP 1	01,3526 54 707 0	TS GOLOC +2		GROUP AFTER THIS		
0013	REP 1	01,3527 3 0154 1	CA TEMPPHS		IS IT A VARIABLE OR TABLE RESTART		
0014	REP 9 LAST 1384	01,3530 7 4744 0	MASK OCT1400		IT'S A VARIABLE RESTART		
0015	REP 357 LAST 1381	01,3531 10 000 0	CCS A				
0016	REP 1	01,3532 1 3543 1	TOP ITSAVAR				
0017	REP 2 LAST 1382	01,3533 10 154 0	GETPART2 CCS	TEMPPHS	IS IT AN X.1 RESTART		
0018	REP 358 LAST 1382	01,3534 10 000 0	CCS A				
0019	REP 1	01,3535 1 3643 1	TOP ITSATBL		NO, ITS A TABLE RESTART		
0020	REP 7 LAST 1379	01,3536 3 4781 0	CA PRIO14		IT IS AN X.1 RESTART, THEREFORE START		
0021	REP 31 LAST 1283	01,3537 0 5042 1	TC FINDVAC		THE DISPLAY RESTART JOB		
0022	REP 48 LAST 1378	E3,1400	EBANK= LST1				
0023	REP 1	01,3540 03185 0	2ADDR INITDSP				
0023	REP 1	01,3541 20103 1					
0024	REP 2 LAST 1382	01,3542 0 3557 0	TC RTRNCADR		FINISHED WITH THIS GROUP, GET NEXT ONE		
0025	REP 10 LAST 1382	01,3543 7 4744 0	ITSAVAR MASK	OCT1400	IS IT TYPE B *		
0026	REP 359 LAST 1382	01,3544 10 000 0	CCS A				
0027	REP 1	01,3545 1 3614 0	TOP ITSLIKEB		YES, IT IS TYPE B		
0028		01,3546 0 0008 1	EXTEND		STORE THE JOB (OR TASK) 2ADDR FOR EXIT		
0029	REP 2 LAST 1382	01,3547 5 0155 0	NDX TEMP2G				
0030	REP 4 LAST 1382	01,3550 3 1437 0	DCA PHSNAME1				
0031	REP 2 LAST 1382	01,3551 52 708 1	DXCH GOLOC				
0032	REP 3 LAST 1382	01,3552 3 0154 1	CA TEMPPHS		SEE IF THIS IS A JOB, TASK, OR A LONGCAL		
0033	REP 3 LAST 1379	01,3553 7 4718 1	MASK OCT7				
0034	REP 3 LAST 1228	01,3554 6 7715 0	AD MINUS2				
0035	REP 380 LAST 1382	01,3555 10 000 0	CCS A				
0036	REP 1	01,3558 1 3728 0	TOP ITSLNGCL		ITS A LONGCALL		

## L RESTARTS ROUTINE

0037	REP	6	LAST	296	01,3557	0 4570 1	RTRNCADR TC	SRETURN	CANT GET HERE	
0038	REP	1			01,3560	1 3562 1	TOP	ITSAWAIT		
0039	REP	1			01,3561	1 3627 0	TOP	ITSAJOB	ITS A JOB	
0040	REP	1			01,3562	3 3766 0	ITSAWAIT CA	WILTCADR	SET UP WAITLIST CALL	
0041	REP	3	LAST	1382	01,3563	54 704 0	TS	GOLOC -1		
0042	REP	3	LAST	1382	01,3564	50 155 0	NDX	TEMP2G	DIRECTLY STORED	
0043	REP	3	LAST	1381	01,3565	3 1054 1	CA	PHSPRDT1		
0044	REP	361	LAST	1382	01,3566	10 000 0	TIMETEST CCS	A	IS IT AN IMMEDIATE RESTART	
0045	REP	362	LAST	1363	01,3567	24 000 1	INCR	A	NO,	
0046	REP	1			01,3570	1 3573 1	TOP	FINDTIME	FIND OUT WHEN IT SHOULD BEGIN	
0047	REP	1			01,3571	1 5367 1	TOP	ITSINDIR	STORED INDIRECTLY	
0048	REP	1			01,3572	1 3612 0	TOP	IMMEDIATE	IT WANTS AN IMMEDIATE RESTART	
R0049	***** THIS MUST BE IN FIXED FIXED *****									
0050					5367		BLOCK	02		
0051	REP	2	LAST	622	4000		SETLOC	PPTAG2		
0052					5367		BANK			
0053	REP	1					COUNT	02/RSROU		
0054	REP	4	LAST	1383	5367	22 706 0	ITSINDIR LXCH	GOLOC +1	GET THE CORRECT E BANK IN CASE THIS IS	
0055	REP	2	LAST	1378	5370	22 006 1	LXCH	BB	SWITCHED ERASABLE	
0056	REP	363	LAST	1383	5371	50 000 1	NDX	A		
0057					5372	3 0001 0	CA	1	GET THE TIME INDIRECTLY	
0058	REP	3	LAST	1383	5373	22 006 1	LXCH	BB	RESTORE THE BB AND GOLOC	
0059	REP	5	LAST	1363	5374	22 706 0	LXCH	GOLOC +1		
0060	REP	2	LAST	1383	5375	1 3573 1	TOP	FINDTIME	FIND OUT WHEN IT SHOULD BEGIN	
R0061	***** YOU MAY RETURN TO SWITCHED FIXED *****									
0062					01,3573		BANK	01		
0063	REP	3	LAST	1382	01,2000		SETLOC	RESTART		
0064					01,3573		BANK			
0065	REP	2	LAST	1382 TO 1383'	43	43*	COUNT	01/RSROU		
0066					01,3573	4 0000 0	FINDTIME	COM	MAKE NEGATIVE SINCE IT WILL BE SUBTRACTED	
0067	REP	221	LAST	1371	01,3574	54 001 1	TS	L	AND SAVE	
0068	REP	4	LAST	1363	01,3575	50 155 0	NDX	TEMP2G		
0069	REP	6	LAST	1360	01,3576	4 1053 1	CS	THASE1		
0070					01,3577	0 0006 1	EXTEND			

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## L RESTARTS ROUTINE

USER=3 PAGE NO. 3 E3 S4

0071	REF 21 LAST 1380	01,3600 60 025 0	SU	TIME1
0072	REF 364 LAST 1383	01,3601 10 000 0	CCS	A
0073		01,3602 4 0000 0	COM	
0074	REF 4 LAST 918	01,3603 6 7700 1	AD	OCT37776
0075	REF 158 LAST 1377	01,3604 6 4712 1	AD	ONE
0076	REF 222 LAST 1383	01,3605 6 0001 0	AD	L
0077	REF 365 LAST 1384	01,3606 10 000 0	CCS	A
0078	REF 253 LAST 1363	01,3607 3 4714 1	CA	ZERO
0079		01,3610 1 3612 0	TCP	+2
0080		01,3611 1 3612 0	TCP	+1
0081	REF 159 LAST 1384	01,3612 6 4712 1	IMEDIATE AD	ONE
0082	REF 6 LAST 1383	01,3613 0 0704 1	TC	GOLOC -1
0083	REF 3 LAST 1382	01,3614 3 3557 0	ITSLIKEB CA	RTRNCADR
0084	REF 2 LAST 1382	01,3615 54 157 0	TS	TEMPSWCH
0085	REF 1	01,3616 3 3763 0	CA	PRT2CADR
0086	REF 7 LAST 1384	01,3617 54 707 0	TS	GOLOC +2
0087	REF 4 LAST 1362	01,3620 3 0154 1	CA	TEMPPHS
0088	REF 1	01,3621 7 6043 1	MASK	OCT177
0089	REF 5 LAST 1384	01,3622 54 154 0	TS	TEMPPHS
0090		01,3623 0 0006 1	EXTEND	
0091	REF 5 LAST 1383	01,3624 5 0155 0	NDX	TEMP2G
0092	REF 5 LAST 1362	01,3625 3 1437 0	DCA	PHSNAME1
0093	REF 8 LAST 1384	01,3626 52 706 1	DXCH	GOLOC
0094	REF 6 LAST 1384	01,3627 50 155 0	ITSAJOB	NDX TEMP2G
0095	REF 4 LAST 1363	01,3630 3 1054 1	CA	PHSPROT1
0096	REF 9 LAST 1384	01,3631 54 704 0	CKNOVAC	TS GOLOC -1
0097		01,3632 0 0006 1	EXTEND	
0098	REF 1	01,3633 6 3837 0	BZMP	ITSNOVAC
0099	REF 1	01,3634 3 3765 0	CAP	PVACCADR
0100	REF 10 LAST 1384	01,3635 56 704 1	XCH	GOLOC -1
0101	REF 11 LAST 1384	01,3636 0 0704 1	TC	GOLOC -1
0102	REF 1	01,3637 3 3767 1	ITSNOVAC	CAP NOVACADR
0103	REF 12 LAST 1384	01,3640 56 704 1	XCH	GOLOC -1
0104		01,3641 4 0000 0	COM	
0105	REF 13 LAST 1384	01,3642 0 0704 1	TC	GOLOC -1
0106	REF 45 LAST 1368	01,3643 54 020 1	ITSATEBL	TS CYR
0107	REF 46 LAST 1384	01,3644 10 020 1	CCS	CYR
0108		01,3645 1 3846 1	TCP	+1
0109	REF 1	01,3646 1 3744 1	TCP	ITSEVEN
0110	REF 4 LAST 1384	01,3647 3 3557 0	CA	RTRNCADR
0111	REF 14 LAST 1384	01,3650 54 707 0	TS	GOLOC +2

TYPE B,  
SO STORE RETURN IN  
TEMPSWCH IN CASE OF AN EVEN PHASESET UP EXIT TO GET TABLE PART OF THIS  
VARIABLE TYPE OF PHASEMAKE THE PHASE LOOK RIGHT FOR THE TABLE  
PART OF THIS VARIABLE PHASE

OBTAIN THE JOB'S 2CADR

NOW ADD THE PRIORITY AND LET'S GO

SAVE PRIO UNTIL WE SEE IF ITS  
A FINDVAC OR A NOVACPOSITIVE, SET UP FINDVAC CALL.  
PICK UP PRIO,  
AND GONEGATIVE,  
SET UP NOVAC CALL,  
CORRECT PRIO,  
AND GO

FIND OUT IF THE PHASE IS ODD OR EVEN

IT'S EVEN

IN CASE THIS IS THE SECOND PART OF A  
TYPE B RESTART, WE NEED PROPER EXIT

## L RESTARTS ROUTINE

0112	REP	6	LAST	1384	01,3851	3 0154 1	CA	TEMPPHS	SET UP POINTER FOR FINDING OUR PLACE IN THE RESTART TABLES	
0113	REP	34	LAST	1371	01,3852	54 021 0	TS	SR		
0114	REP	35	LAST	1385	01,3853	6 0021 1	AD	SR		
0115	REP	7	LAST	1384	01,3854	50 155 0	NDX	TEMP2G		
0116	REP	1			01,3855	8 2001 1	AD	SIZETAB +I		
0117	REP	1			01,3856	54 156 1	TS	POINTER		
0118					01,3857	0 0006 1	CONTBL2	EXTEND	FIND OUT WHAT'S IN THE TABLE	
0119	REP	2	LAST	1385	01,3860	5 0156 0	NDX	POINTER	GET THE 2CADR	
0120	REP	1			01,3861	3 2002 I	DCA	CADRTAB		
0121	REP	15	LAST	1384	01,3862	22 706 0	LXCH	GOLOC +I	STORE THE BB INFORMATION	
0122	REP	366	LAST	1384	01,3863	10 000 0	CCS	A	IS IT A JOB OR IS IT TIMED	
0123	REP	367	LAST	1385	01,3864	24 000 1	INCR	A	POSITIVE, MUST BE A JOB	
0124	REP	1			01,3865	1 3740 0	TCP	ITSAJOB2		
0125	REP	368	LAST	1385	01,3866	24 000 1	INCR	A	MUST BE EITHER A WAITLIST OR LONGCALL	
0126	REP	16	LAST	1385	01,3867	54 705 1	TS	GOLOC	LET-S STORE THE CORRECT CADR	
0127	REP	2	LAST	1383	01,3870	3 3788 0	CA	WILTCADR		
0128	REP	17	LAST	1385	01,3871	54 704 0	TS	GOLOC -I	SET UP OUR EXIT TO WAITLIST	
0129	REP	18	LAST	1385	01,3872	3 0708 0	CA	GOLOC +I	NOW FIND OUT IF IT IS A WAITLIST CALL	
0130	REP	38	LAST	1383	01,3873	7 4701 1	MASK	BIT10	THIS SHOULD BE ONE IF WE HAVE -BB	
0131	REP	369	LAST	1385	01,3874	10 000 0	CCS	A	FOR THAT MATTER SO SHOULD BE BITS 9,8,7,	
A0132									6,5, AND LAST BUT NOT LEAST (PERHAPS NOT	
A0133									IN IMPORTANCE ANYWAY. BIT 4	
0134	REP	1			01,3875	I 3733 I	TCP	ITSWILST	IT IS A WAITLIST CALL	
0135	REP	3	LAST	1385	01,3876	50 158 0	NDX	POINTER	OBTAIN THE ORIGINAL DELTA T	
0136	REP	1			01,3877	3 2000 0	CA	PROTTAB	ADDRESS FOR THIS LONGCALL	
0137	REP	1			01,3700	I 5378 1	TCP	ITSLGCL1	NOW GO GET THE DELTA TIME	
R0138	***** THIS MUST BE IN FIXED FIXED *****									
0139					5378		BLOCK	02		
0140	REP	3	LAST	1383	4000		SETLOC	FFTAG2		
0141					5376		BANK			
0142	REP	2	LAST	1383 TO 1383'	7	7*	COUNT	02/RSRQ		
0143	REP	19	LAST	1385	5376	22 708 0	ITSLGCL1	LXCH	OBTAIN THE CORRECT E BANK	
0144	REP	4	LAST	1383	5377	22 008 1	LXCH	BB	AND PRESERVE OUR E AND P BANKS	
0145	REP	20	LAST	1385	5400	22 706 0	LXCH	GOLOC +I	GET THE DELTA TIME	
0146					5401	0 0008 1	EXTEND			
0147	REP	370	LAST	1385	5402	5 0000 1	NDX	A		
0148					5403	3 0001 0	DCA	0		

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## L RESTARTS ROUTINE

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0149	REP 21 LAST 1385	5404 22 706 0	LXCH	GOLOC +1	RESTORE OUR E AND P BANK	
0150	REP 5 LAST 1385	5405 22 008 1	LXCH	BB	RESTORE THE TASKS E AND P BANKS	
0151	REP 22 LAST 1386	5406 22 706 0	LXCH	GOLOC +1	AND PRESERVE OUR L	
0152	REP 1	5407 1 3701 0	TCP	ITSLOC12	NOW LET'S PROCESS THIS LONGCALL	
R0153	***** YOU MAY RETURN TO SWITCHED FIXED *****					
0154		01,3701	BANK	01		
0155	REP 4 LAST 1383	01,2000	SETLOC	RESTART		
0156		01,3701	BANK			
0157	REP 3 LAST 1383 TO 1385'	70 113*	COUNT	01/RSRQ		
0158	REP 6 LAST 1204	01,3701 53<140 1	ITSLGCL2	DXCH LONGTIME		
0159		01,3702 0 0008 1	EXTEND		CALCULATE TIME LEFT	
0160	REP 30 LAST 1380	01,3703 4 0025 1	DCS	TIME2		
0161	REP 7 LAST 1386	01,3704 21<140 1	DAS	LONGTIME		
0162		01,3705 0 0008 1	EXTEND			
0163	REP 2 LAST 1380	01,3708 3 1138 1	DCA	LONGBASE		
0164	REP 8 LAST 1386	01,3707 21<140 1	DAS	LONGTIME		
0165	REP 9 LAST 1388	01,3710 11<137 1	CCS	LONGTIME	FIND OUT HOW THIS SHOULD BE RESTARTED	
0166	REP 1	01,3711 1 3721 1	TCP	LONGCLCL		
0167		01,3712 1 3714 1	TCP	+2		
0168	REP 2 LAST 1363	01,3713 1 3807 1	TCP	IMMEDIATE -3		
0169	REP 10 LAST 1368	01,3714 11<140 1	CCS	LONGTIME +1		
0170	REP 2 LAST 1368	01,3715 1 3721 1	TCP	LONGCLCL		
0171		01,3716 13 717 1	NOOP		CAN'T GET HERE *****	
0172	REP 3 LAST 1386	01,3717 1 3807 1	TCP	IMMEDIATE -3		
0173	REP 4 LAST 1386	01,3720 1 3812 0	TCP	IMMEDIATE		
0174	REP 1 LAST 1386	01,3721 3 3764 1	LONGCLCL	CA	WE WILL GO TO LONGCALL	
0175	REP 23 LAST 1386	01,3722 54 704 0	TS	GOLOC -1		
0176		01,3723 0 0008 1	EXTEND		PREPARE OUR ENTRY TO LONGCALL	
0177	REP 11 LAST 1368	01,3724 3 1140 0	DCA	LONGTIME		
0178	REP 24 LAST 1388	01,3725 0 0704 1	TC	GOLOC -1		
0179	REP 3 LAST 1385	01,3726 3 3766 0	ITSLNGCL	CA	ASSUME IT WILL GO TO WAITLIST	
0180	REP 25 LAST 1388	01,3727 54 704 0	TS	GOLOC -1		
0181	REP 8 LAST 1385	01,3730 50 155 0	NDX	TEMP2G		
0182	REP 5 LAST 1384	01,3731 4 1054 0	CS	PHSPRDT1	GET THE DELTA T ADDRESS	
0183	REP 2 LAST 1385	01,3732 1 5378 1	TCP	ITSLOC1	NOW GET THE DELTA TIME	
0184	REP 26 LAST 1386	01,3733 4 0708 1	ITSWILST	CS	CORRECT THE RBCN INFORMATION	
0185	REP 27 LAST 1386	01,3734 54 706 1	TS	GOLOC +1		

## L RESTARTS ROUTINE

0186	REP	4	LAST 1385	01,3735	50 156 0		NDX	POINTER	GET THE DT AND FIND OUT IF IT WAS STORED
0187	REP	2	LAST 1385	01,3736	3 2000 0		CA	PROTTAB	DIRECTLY OR INDIRECTLY
0188	REP	1		01,3737	1 3566 0		TCP	TIMETEST	FIND OUT HOW THE TIME IS STORED
0189	REP	28	LAST 1386	01,3740	56 705 0	ITSAJOR2	XCH	GOLOC	STORE THE CADR
0190	REP	5	LAST 1387	01,3741	50 156 0		NDX	POINTER	ADD THE PRIORITY AND LET'S GO
0191	REP	3	LAST 1387	01,3742	3 2000 0		CA	PROTTAB	
0192	REP	1		01,3743	1 3831 1		TCP	CHNOVAC	
0193	REP	3	LAST 1384	01,3744	3 0157 1	ITSEVEN	CA	TEMPSWCH	SET UP FOR EITHER THE SECOND PART OF THE
0194	REP	29	LAST 1387	01,3745	54 707 0		TS	GOLOC +2	TABLE, OR A RETURN FOR THE NEXT GROUP
0195	REP	9	LAST 1386	01,3746	50 155 0		NDX	TEMP2G	SET UP POINTER FOR OUR LOCATION WITHIN
0196	REP	2	LAST 1385	01,3747	3 2000 0		CA	SIZETAB	THE TABLE
0197	REP	7	LAST 1385	01,3750	6 0154 1		AD	TEMPPHS	THIS MAY LOOK BAD BUT LET'S SEE YOU DO
0198	REP	8	LAST 1387	01,3751	6 0154 1		AD	TEMPPHS	BETTER IN TIME OR NUMBER OF LOCATIONS
0199	REP	9	LAST 1387	01,3752	6 0154 1		AD	TEMPPHS	
0200	REP	6	LAST 1387	01,3753	54 156 1		TS	POINTER	
0201	REP	1		01,3754	1 3857 1		TCP	CONTBL2	NOW PROCESS WHAT IS IN THE TABLE
0202	REP	46	LAST 1383	01,3755	3 6214 0	PHSPART2	CA	THREE	SET THE POINTER FOR THE SECOND HALF OF
0203	REP	7	LAST 1387	01,3756	28 156 1	ADS		POINTER	THE TABLE
0204	REP	5	LAST 1384	01,3757	3 3557 0		CA	RTRNCADR	THIS WILL BE OUR LAST TIME THROUGH THE
0205	REP	30	LAST 1387	01,3760	54 707 0		TS	GOLOC +2	EVEN TABLE, SO AFTER IT GET THE NEXT
A0206									GROUP
0207	REP	2	LAST 1387	01,3761	1 3857 1		TCP	CONTBL2	SO LET'S GET THE SECOND ENTRY IN THE TBL
0208	REP	669	LAST 1382	0154		TEMPPHS	EQUALS	MPAC	
0209	REP	670	LAST 1387	0155		TEMP2G	EQUALS	MPAC +1	
0210	REP	671	LAST 1387	0156		POINTER	EQUALS	MPAC +2	
0211	REP	672	LAST 1387	0157		TEMPSWCH	EQUALS	MPAC +3	
0212	REP	1		0705		GOLOC	EQUALS	VAC5 +20D	
0213	REP	7	LAST 1364	7715		MINUS2	EQUALS	NEG2	
0214	REP	9	LAST 1185	6043		OCT177	EQUALS	LOW7	
0215	REP	1		01,3762	03755 0	PHS2CADR	GENADR	PHSPART2	
0216	REP	1		01,3763	03533 1	PRT2CADR	GENADR	GETPART2	
0217	REP	4	LAST 1284	01,3764	05231 1	LGCLCADR	GENADR	LONGCALL	
0218	REP	32	LAST 1362	01,3765	05042 1	FVACCADR	GENADR	FINDVAC	
0219	REP	52	LAST 1205	01,3766	05140 1	WILTACDR	GENADR	WAITLIST	
0220	REP	32	LAST 1372	01,3767	05027 1	NOVACADR	GENADR	NOVAC	

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L IMU MODE SWITCHING ROUTINES

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0001 REP 1 5410 BLOCK 02  
0002 REP 1 4000 SETLOC PPTAG3  
0003 REP 1 5410 BANK

0004 REP 1 E3,1471 EBANK= COMMAND

E0005 FIXED-FIXED ROUTINES.

0006 REP 1 COUNT 02/IMODE

0007 REP 254 LAST 1384 5410 3 4714 1 ZEROICDU CAF ZERO ZERO 1CDU COUNTERS.  
0008 REP 29 LAST 1333 5411 54 032 1 TS CDUX  
0009 REP 17 LAST 1333 5412 54 033 0 TS CDUY  
0010 REP 23 LAST 1334 5413 54 034 1 TS CDUZ  
0011 REP 319 LAST 1380 5414 0 0002 0 TC O  
0012 REP 33 LAST 1383 4702 SPSCODE = B1T9

## L IMU MODE SWITCHING ROUTINES

## P0013 IMU ZEROING ROUTINE.

0014		11,3721	BANK	11		
0015	REP 1	07,2000	SETLOC MODESW			
0016		07,2516	BANK			
0017	REP 1		COUNT	07/IMODE		
0018		07,2516 0 0004 0	IMUZERO	INHINT	ROUTINE TO ZERO ICDUS.	
0019	REP 41	LAST 382	07,2517 4 1036 1	CS DSPTAB +11D	DONT ZERO CDUS IF IMU IN GIMBAL LOCK AND	
0020	REP 4	LAST 180	07,2520 7 4728 1	MASK BITS4d6	COARSE ALIGN (GIMBAL RUNAWAY PROTECTION)	
0021	REP 371	LAST 1385	07,2521 10 000 0	CCS A		
0022	REP 1		07,2522 1 2528 0	TCP IMUZEROA		
0023	REP 37	LAST 1328	07,2523 0 5537 0	TC ALARM	IP SO.	
0024			07,2524 00208 0	OCT 00208		
0025	REP 1		07,2525 1 3461 0	TCP CAGETSTJ +4	IMMEDIATE FAILURE.	
0032	REP 2	LAST 1389	07,2528 0 3455 0	IMUZEROA TC	CAGETSTJ	
R0033			DO ALL THE WORK.			
0034	REP 29	LAST 1034	07,2527 4 1321 1	CS IMODES33	DISABLE DAP AUTO AND HOLD MODES	
0035	REP 2	LAST 526	07,2530 7 4730 0	MASK SUPER011	BITS FOR GROUND	
0036	REP 30	LAST 1389	07,2531 27<321 1	ADS IMODES33		
0037	REP 43	LAST 721	07,2532 4 1320 0	CS IMODES30	INHIBIT ICDUPAIL AND IMUPAIL (IN CASE WE	
0038	REP 1		07,2533 7 5858 0	MASK BITS3d4	JUST CAME OUT OF COARSE ALIGN).	
0039	REP 44	LAST 1389	07,2534 27<320 0	ADS IMODES30		
0040	REP 5	LAST 1389	07,2535 4 4728 1	CS BITS4d8	SEND ZERO ENCODE WITH COARSE AND ERROR	
0041			07,2536 0 0008 1	EXTEND	COUNTER DISABLED.	
0042	REP 37	LAST 983	07,2537 03 012 1	WAND CHAN12		
0043	REP 3	LAST 140	07,2540 0 3070 0	TC NOATTOPP	TURN OFF NO ATT LAMP.	
0044	REP 40	LAST 1363	07,2541 3 4708 1	CAP BITS		
0045			07,2542 0 0008 1	EXTEND		
0046	REP 38	LAST 1389	07,2543 05 012 1	WOR CHAN12		
00461	REP 3	LAST 140	07,2544 0 5410 1	TC ZEROICDU		
0047	REP 45	LAST 1363	07,2545 3 4705 1	CAP BITS		
0048	REP 53	LAST 1387	07,2548 0 5140 1	TC WAITLIST		
0049	REP 5	LAST 183	E3,1474	BRANK= CDUIND		
0050	REP 1		07,2547 02581 1	2ADR IMUZERO2		
0050	REP 1		07,2550 16103 1			
0051	REP 45	LAST 1389	07,2551 4 1320 0	CS IMODES30	S2E IF IMU OPERATING AND ALARM IF NOT.	
0052	REP 34	LAST 1388	07,2552 7 4702 1	MASK BITS		
0053	REP 372	LAST 1389	07,2553 10 000 0	CCS A		
0054	REP 1		07,2554 1 2557 0	TCP MODESEXIT		

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## L IMU MODE SWITCHING ROUTINES

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0055 REP 38 LAST 1389	07,2555 0 5537 0	TC	ALARM	
0056	07,2556 00210 1	OCT	210	
0057	07,2557 0 0003 1	MODEEXIT	RELINT	GENERAL MODE-SWITCHING EXIT.
0058 REP 7 LAST 1383	07,2560 1 4570 0	TOP	SWRETURN	
0059 REP 1	07,2561 0 3443 1	IMUZERO2	TC	CAGETEST
0061 REP 4 LAST 1389	07,2562 0 5410 1	TC	ZEROICDU	ZERO CDUX, CDUY, CDUZ
0062 REP 41 LAST 1389	07,2563 4 4706 0	CS	BITS	REMOVE ZERO DISCRETE.
0063	07,2564 0 0008 1	EXTEND		
0064 REP 39 LAST 1389	07,2565 03 012 1	WAND	CHAN12	
0065 REP 38 LAST 1363	07,2566 3 4700 1	CAP	BIT11	
0066 REP 4 LAST 159	07,2567 0 5161 1	TC	VARDELAY	WAIT 10 SECS FOR CTRS TO FIND GIMBALS
0067 REP 2 LAST 1390	07,2570 0 3443 1	IMUZERO3	TC	CAGETEST
0069 REP 2 LAST 1389	07,2571 4 5656 0	CS	BITS3d4	REMOVE IMUFAIL AND ICDFAIL INHIBIT.
0070 REP 46 LAST 1389	07,2572 7 1320 0	MASK	IMODES30	
0071 REP 47 LAST 1390	07,2573 55=320 0	TS	IMODES30	
0072 REP 3 LAST 1389	07,2574 4 4730 0	CS	SUPER011	ENABLE DAP AUTO AND HOLD MODES
0073 REP 31 LAST 1389	07,2575 7 1321 1	MASK	IMODES33	BITS FOR GROUND
0074 REP 32 LAST 1390	07,2576 55=321 1	TS	IMODES33	
0075 REP 39 LAST 1060	07,2577 0 4633 0	TC	IBNKCALL	
0076 REP 5 LAST 154	07,2600 14665 1	CADR	SETISSW	SET ISS WARNING IF EITHER OF ABOVE ARE PRESENT.
0077 REP 1	07,2601 1 3433 1	TOP	ENDIMU	

## L IMU MODE SWITCHING ROUTINES

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## P0078 IMU COARSE ALIGN MODE.

0079			07,2602	0 0004 0	IMUCOARS	INHINT		
0080	REP	3	LAST 1389	07,2603	0 3455 0	TC	CAGETSTJ	
0081	REP	3	LAST 183	07,2604	0 2746 0	TC	SETCOARS	
0082	REP	41	LAST 1364	07,2605	3 6211 0	CAP	SIX	
0083	REP	54	LAST 1389	07,2606	0 5140 1	TC	WAITLIST	
0084	REP	6	LAST 1369	E3,1474		EBANK=	CDUIND	
0085	REP	1		07,2607	02612 0	2ADR	COARS	
0085	REP	1		07,2610	16103 1			
0086	REP	2	LAST 1389	07,2611	1 2557 0	TC	MODEEXIT	
0087	REP	3	LAST 1390	07,2612	0 3443 1	COARS	TC	CAGETEST
0088	REP	46	LAST 1369	07,2613	3 4705 1		CAP	BITS
0089				07,2614	0 0006 1		EXTEND	
0090	REP	40	LAST 1390	07,2615	05 012 1		WOR	CHAN12
0091	REP	69	LAST 1379	07,2616	3 4711 1	CAP	TWO	
0092	REP	7	LAST 1391	07,2617	55=474 0	COARS1	TS	CDUIND
0093	REP	8	LAST 1391	07,2620	51=474 1		INDEX	CDUIND
0094	REP	21	LAST 1328	07,2621	3 1155 1		CA	THETAD
0095				07,2622	0 0006 1		EXTEND	
0096	REP	9	LAST 1391	07,2623	5 1474 1		INDEX	CDUIND
0097	REP	30	LAST 1368	07,2624	20 032 1		MSU	CDUX
0098				07,2625	0 0006 1		EXTEND	
0099	REP	45	LAST 1363	07,2626	7 4676 0	MP	BIT13	
0100	REP	223	LAST 1364	07,2627	56 001 0	XCH	L	SHFT RIGHT 2
0101				07,2630	6 0000 1		DOUBLE	ROUND
0102	REP	14	LAST 1379	07,2631	54 061 1	TS	ITEMP1	
0103				07,2632	1 2634 0		TOP	+2
0104	REP	224	LAST 1391	07,2633	28 001 1		ADS	L
0105	REP	10	LAST 1391	07,2634	51=474 1	INDEX	CDUIND	DIFFERENCE TO BE COMPUTED
0106	REP	2	LAST 1368	07,2635	23=471 1	LXCH	COMMAND	
0107	REP	11	LAST 1391	07,2636	11=474 0	CCS	CDUIND	
0108	REP	1		07,2637	0 2617 0	TC	COARS1	
0109	REP	70	LAST 1391	07,2640	3 4711 1	CAP	TWO	
0110	REP	5	LAST 1390	07,2641	0 5161 1	TC	VARDLAY	MINIMUM OF 4 MS WAIT

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## L IMU MODE SWITCHING ROUTINES

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0111	REP	4	LAST 1391	07,2642	0 3443 1	COARS2	TC	CAGETEST	
0112	REP	15	LAST 1391	07,2643	54 061 1		TS	ITEMP1	DONT CONTINUE IF CAGED.
0113	REP	71	LAST 1391	07,2644	3 4711 1		CAP	TWO	SETS TO +0.
0114	REP	12	LAST 1391	07,2645	55*474 0	+3	TS	CDUIND	SET CDU INDICATOR
0115	REP	13	LAST 1392	07,2646	51*474 1		INDEX	CDUIND	
0116	REP	3	LAST 1391	07,2647	11*471 0		CCS	COMMAND	
0117	REP	1		07,2650	0 2654 1		TC	COMPOS	
0118	REP	1		07,2651	0 2683 0		TC	NEXTCDU +1	
0119	REP	1		07,2652	0 2721 1		TC	CONNEG	
0120	REP	2	LAST 1392	07,2653	0 2683 0		TC	NEXTCDU +1	
0121	REP	1		07,2654	6 3544 1	COMPOS	AD	-COMMEX	
0122				07,2655	0 0006 1		EXTEND		COMMEX = MAX NUMBER OF PULSES ALLOWED
0123	REP	1		07,2656	6 2731 0		BZNP	COMZERO	MINUS ONE
0124	REP	14	LAST 1392	07,2657	51*474 1		INDEX	CDUIND	
0125	REP	4	LAST 1392	07,2660	55*471 0		TS	COMMAND	
0126	REP	1		07,2661	4 3545 1		CS	-COMMEX-	REDUCE COMMAND BY MAX NUMBER OF PULSES ALLOWED
0127	REP	16	LAST 1392	07,2662	24 061 0	NEXTCDU	INCR	ITEMP1	
0128	REP	16	LAST 1364	07,2663	6 4713 0		AD	NEGO	
0129	REP	15	LAST 1392	07,2664	51*474 1		INDEX	CDUIND	
0130	REP	4	LAST 963	07,2665	54 050 0		TS	COUXCMD	SET UP COMMAND REGISTER.
0131	REP	16	LAST 1392	07,2666	11*474 0		CCS	CDUIND	
0132	REP	1		07,2667	0 2845 1		TC	COARS2 +3	
0133	REP	17	LAST 1392	07,2670	10 061 1		CCS	ITEMP1	
0134	REP	1		07,2671	1 2735 0		TCP	SENDPULS	SEE IF ANY PULSES TO GO OUT.
0135	REP	13	LAST 781	07,2672	0 5158 0		TC	FIXDELAY	
0136				07,2673	00226 1		DEC	150	
0137	REP	72	LAST 1392	07,2674	3 4711 1		CAP	TWO	
0138	REP	18	LAST 1392	07,2675	54 061 1	CHKCORS	TS	ITEMP1	
0139	REP	373	LAST 1389	07,2676	50 000 1		INDEX	A	
0140	REP	31	LAST 1391	07,2677	3 0032 0		CA	COUX	
0141				07,2700	0 0008 1		EXTEND		
0142	REP	19	LAST 1392	07,2701	5 061 0		INDEX	ITEMP1	
0143	REP	22	LAST 1391	07,2702	21*155 0		MSU	THETAD	
0144	REP	374	LAST 1392	07,2703	10 000 0		CCS	A	
0145	REP	1		07,2704	1 2712 0		TCP	COARSERR	
0146	REP	1		07,2705	1 2707 1		TCP	CORSCHK2	
0147	REP	2	LAST 1392	07,2706	1 2712 0		TCP	COARSERR	

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## L IMU MODE SWITCHING ROUTINES

0148	REP	20	LAST 1392	07,2707	10 061 1	CORSCHK2	CCS	ITEMP1	
0149	REP	1		07,2710	1 2875 0		TCP	CHKCORS	
0150	REP	2	LAST 1390	07,2711	1 3433 1		TCP	ENDIMU	END OF COARSE ALIGNMENT.
0151	REP	1		07,2712	6 2720 0	COARSEERR	AD	COARSTOL	2 DEGREES.
0152				07,2713	0 0008 1		EXTEND		
0153	REP	2	LAST 1392	07,2714	6 2707 0		BZMP	CORSCHK2	
0154	REP	39	LAST 1390	07,2715	0 5537 0		TC	ALARM	
0155				07,2716	00211 0		OCT	211	COARSE ALIGN ERROR.
0156	REP	2	LAST 139	07,2717	1 3441 1		TCP	IMUBAD	
0157				07,2720	77511 1	COARSTOL	DEC	- .01111	2 DEGREES SCALED AT HALF-REVOLUTIONS
0158	REP	2	LAST 1392	07,2721	6 3544 1	CONNEX	AD	-COMMAX	
0159				07,2722	0 0008 1		EXTEND		
0160	REP	2	LAST 1392	07,2723	6 2731 0		BZMP	COMZERO	
0161				07,2724	4 0000 0		COM		
0162	REP	17	LAST 1392	07,2725	51<474 1		INDEX	CDUIND	
0163	REP	5	LAST 1392	07,2726	55<471 0		TS	COMMAND	
0164	REP	2	LAST 1392	07,2727	3 3545 0		CA	-COMMAX-	
0165	REP	3	LAST 1392	07,2730	0 2682 1		TC	NEXTCDU	
0166	REP	255	LAST 1388	07,2731	3 4714 1	COMZERO	CAP	ZERO	
0167	REP	18	LAST 1393	07,2732	51<474 1		INDEX	CDUIND	
0168	REP	6	LAST 1393	07,2733	57<471 1		XCH	COMMAND	
0169	REP	4	LAST 1393	07,2734	0 2882 1		TC	NEXTCDU	
0170	REP	6	LAST 1037	07,2735	3 7707 0	SENDPULS	CAP	13,14,15	
0171				07,2736	0 0008 1		EXTEND		
0172	REP	12	LAST 983	07,2737	05 014 1		WOR	CHAN14	
0173	REP	1		07,2740	3 3548 0		CAP	600MS	
0174	REP	2	LAST 1392	07,2741	1 2841 1		TCP	COARS2 -1	
0175	REP	47	LAST 1391	07,2742	3 4705 1	CA+ECE	CAP	BIT8	
0176				07,2743	0 0008 1		EXTEND		
0177	REP	41	LAST 1391	07,2744	05 012 1		WOR	CHAN12	
0178	REP	65	LAST 1283	07,2745	0 5213 1		TC	TASKOVER	

THEN TO VARDDELAY  
ENABLE ALL THREE ISS CDU ERROR COUNTERS

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## L IMU MODE SWITCHING ROUTINES

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0170	REP 41	LAST 1383	07,2746	3 4707 0	SETCOARS CAP	BIT4		BYPASS IF ALREADY IN COARSE ALIGN
0180			07,2747	0 0008 1	EXTEND			
0181	REP 42	LAST 1393	07,2750	02 012 0	RAND	CHAN12		
0182	REP 375	LAST 1392	07,2751	10 000 0	CCS	A		
0183	REP 320	LAST 1388	07,2752	0 0002 0	TC	0		
0184	REP 48	LAST 1393	07,2753	4 4705 0	CS	BIT8		CLEAR ISS ERROR COUNTERS
0185			07,2754	0 0008 1	EXTEND			
0186	REP 43	LAST 1394	07,2755	03 012 1	WAND	CHAN12		
0187	REP 39	LAST 1385	07,2756	4 4701 1	CS	BIT10		KNOCK DOWN GYRO ACTIVITY
0188			07,2757	0 0008 1	EXTEND			
0189	REP 13	LAST 1393	07,2760	03 014 1	WAND	CHAN14		
0190	REP 256	LAST 1393	07,2761	4 4714 0	CS	ZERO		
0191	REP 2	LAST 148	07,2762	54 047 0	TS	GYROCMD		
0192	REP 42	LAST 1394	07,2763	3 4707 0	CAP	BIT4		PUT ISS IN COARSE ALIGN
0193			07,2764	0 0006 1	EXTEND			
0194	REP 44	LAST 1394	07,2765	05 012 1	WOR	CHAN12		
0195	REP 42	LAST 1389	07,2766	4 1036 1	CS	DSPTAB +11D		TURN ON NO ATT LAMP
0196	REP 1		07,2767	7 3011 0	MASK	OCT40010		
0197	REP 43	LAST 1394	07,2770	27<036 1	ADS	DSPTAB +11D		
0198	REP 33	LAST 1390	07,2771	4 1321 1	CS	IMODES33		DISABLE DAP AUTO AND HOLD MODES
0199	REP 49	LAST 1394	07,2772	7 4705 0	MASK	BIT8		
0200	REP 34	LAST 1394	07,2773	27<321 1	ADS	IMODES33		
0201	REP 48	LAST 1390	07,2774	4 1320 0	CS	IMODES30		DISABLE IMUPAIL
0202	REP 43	LAST 1394	07,2775	7 4707 1	MASK	BIT4		
0203	REP 49	LAST 1394	07,2776	27<320 0	ADS	IMODES30		
0204	REP 42	LAST 1390	07,2777	4 4708 0	RNDREFDR CS	BITS		KNOCK DOWN TRACK PLAG
0205	REP 24	LAST 969	07,3000	7 0075 1	MASK	FLAGWRD1		
0206	REP 25	LAST 1394	07,3001	54 075 1	TS	FLAGWRD1		
0207	REP 51	LAST 1377	07,3002	4 4874 1	CS	BIT15		KNOCK DOWN DRIFT PLAG
0208	REP 19	LAST 1195	07,3003	7 0076 1	MASK	FLAGWRD2		
0209	REP 20	LAST 1394	07,3004	54 076 1	TS	FLAGWRD2		
0210	REP 46	LAST 1391	07,3005	4 4878 0	CS	BIT13		KNOCK DOWN REFSMMAT PLAG
0211	REP 2	LAST 417	07,3006	7 0077 0	MASK	FLAGWRD3		
0212	REP 3	LAST 1394	07,3007	54 077 0	TS	FLAGWRD3		
0213	REP 321	LAST 1394	07,3010	0 0002 0	TC	0		
0214			07,3011	40010 1	OCT40010 OCT	40010		

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P0215 IMU FINE ALIGN MODE SWITCH.

0216			07,3012	0 0004 0	DAPFINE	INHINT		
0217	REP	4 LAST 1391	07,3013	0 3455 0		TC	CAGESTJ	SEE IF IMU BEING CAGED.
0218	REP	1	07,3014	4 3543 1		CS	BITS4-5	RESET ZERO AND COARSE
0219			07,3015	0 0006 1		EXTEND		
0220	REP	45 LAST 1394	07,3016	03 012 1		WAND	CHAN12	
0221	REP	50 LAST 1394	07,3017	4 4705 0		CS	BITS	INSURE DAP AUTO AND HOLD MODES ENABLED
0222	REP	35 LAST 1394	07,3020	7 1321 1		MASK	IMODES33	
0223	REP	36 LAST 1395	07,3021	55=321 1		TS	IMODES33	
0224	REP	4 LAST 1389	07,3022	0 3070 0		TC	NOATTOP	
0225	REP	40 LAST 1394	07,3023	3 4701 0		CAP	BIT10	
0226	REP	55 LAST 1391	07,3024	0 5140 1		TC	WAITLIST	
0227	REP	19 LAST 1393	E3,1474			EBANK=	CDUIND	
0228	REP	1	07,3025	03038 1		2CADR	IPAILOK	IT ON FOR THE FIRST 5 SECs OF FINE ALIGN
0228	REP	1	07,3026	16103 1				
0229	REP	5 LAST 779	07,3027	3 4735 1		CAP	2SECs	
0230	REP	56 LAST 1395	07,3030	0 5140 1		TC	WAITLIST	
0231	REP	20 LAST 1395	E3,1474			EBANK=	CDUIND	
0232	REP	1	07,3031	03034 0		2CADR	IMUFINED	
0232	REP	1	07,3032	16103 1				
0233	REP	3 LAST 1391	07,3033	1 2557 0		TOP	MODEBxit	
0234	REP	5 LAST 1392	07,3034	0 3443 1	IMUFINED	TC	CAGETEST	
0235	REP	3 LAST 1393	07,3035	1 3433 1		TOP	ENDIMU	SEE THAT NO ONE HAS CAGED THE IMU.

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## L IMU MODE SWITCHING ROUTINES

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0236	REP 1	LAST 1393	07,3038 0 3450 0	IPAILOK	TC	CAGETSTO	ENABLE IMU FAIL UNLESS IMU BEING CAGED.
0237	REP 66	LAST 1393	07,3037 1 5213 0		TOP	TASKOVER	IT IS.
0238	REP 44	LAST 1394	07,3040 3 4707 0		CAP	BIT4	
0239			07,3041 0 0008 1	EXTEND			DONT RESET IMU FAIL INHIBIT IF SOMEONE
0240	REP 46	LAST 1395	07,3042 02 012 0	RAND	CHAN12		HAS GONE INTO COARSE ALIGN.
0241	REP 376	LAST 1394	07,3043 10 000 0	CCS	A		
0242	REP 67	LAST 1396	07,3044 1 5213 0	TOP	TASKOVER		
0243	REP 50	LAST 1394	07,3045 4 1320 0	CS	IMODES30		RESET IMUFAIL.
0244	REP 47	LAST 1394	07,3046 7 4676 0	MASK	BIT13		
0245	REP 51	LAST 1396	07,3047 27=320 0	ADS	IMODES30		
0246	REP 45	LAST 1396	07,3050 4 4707 1	CS	BIT4		
0247	REP 52	LAST 1396	07,3051 7 1320 0	PPAILOK2	MASK	IMODES30	
0248	REP 53	LAST 1396	07,3052 55=320 0	TS	IMODES30		
0249	REP 40	LAST 1390	07,3053 0 4633 0	TC	IBNDCALL		
0250	REP 6	LAST 1390	07,3054 14685 1	CADR	SETISSW		THE ISS WARNING LIGHT MAY COME ON NOW
0251	REP 68	LAST 1396	07,3055 1 5213 0	TOP	TASKOVER		THAT THE INHIBIT HAS BEEN REMOVED.
0252	REP 2	LAST 1396	07,3056 0 3450 0	PPAILOK	TC	CAGETSTO	ENABLE PIP FAIL PROG ALARM.
0253	REP 69	LAST 1396	07,3057 1 5213 0		TOP	TASKOVER	
0254	REP 54	LAST 1398	07,3060 4 1320 0	CS	IMODES30		RESET IMU AND PIPA FAIL BITS.
0255	REP 41	LAST 1395	07,3061 7 4701 1	MASK	BIT10		
0256	REP 55	LAST 1398	07,3062 27=320 0	ADS	IMODES30		
0257	REP 37	LAST 1395	07,3063 4 1321 1	CS	IMODES33		
0258	REP 48	LAST 1398	07,3064 7 4676 0	MASK	BIT13		
0259	REP 38	LAST 1398	07,3065 27=321 1	ADS	IMODES33		
0260	REP 43	LAST 1394	07,3066 4 4706 0	CS	BITS		
0261	REP 1		07,3067 1 3051 1	TOP	PPAILOK2		
0262	REP 2	LAST 1394	07,3070 4 3011 0	NOATTOPP	CS	OCT40010	SUBROUTINE TO TURN OFF NO ATT LAMP.
0263	REP 44	LAST 1394	07,3071 7 1036 1	MASK		DSPTAB +11D	
0264	REP 52	LAST 1394	07,3072 6 4674 0	AD		BIT15	
0265	REP 45	LAST 1398	07,3073 55=036 1	TS		DSPTAB +11D	
0266	REP 322	LAST 1394	07,3074 0 0002 0	TC	Q		

## L IMU MODE SWITCHING ROUTINES

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P0287 ROUTINES TO INITIATE AND TERMINATE PROGRAM USE OF THE PIPAS. NO IMUSTALL REQUIRED IN EITHER CASE.

0272	REP 257	LAST 1394	07,3075	4 4714 0	PIPUSE	CS	ZERO	
0273	REP 12	LAST 788	07,3076	54 037 1		TS	PIPAX	
0274	REP 3	LAST 430	07,3077	54 040 1		TS	PIPAY	
0275	REP 6	LAST 788	07,3100	54 041 0		TS	PIPAZ	
02752	REP 3	LAST 1396	07,3101	0 3450 0	PIPUSE1	TC	CAGETSTO	DO NOT ENABLE PIPA FAIL IF IMU IS CAGED
02754	REP 6	LAST 1390	07,3102	1 4570 0		TCP	SWRETURN	
02756			07,3103	0 0004 0			INHINT	
0276	REP 78	LAST 1363	07,3104	4 4712 0		CS	BIT1	IF PIPA FAILS FROM NOW ON (UNTIL
0277	REP 56	LAST 1396	07,3105	7 1320 0		MASK	IMODES30	PIPPRE2), LIGHT ISS WARNING.
0278	REP 57	LAST 1397	07,3106	55<320 0		TS	IMODES30	
0279	REP 41	LAST 1396	07,3107	0 4633 0	PIPPRE2	TC	IBNKCALL	ISS WARNING MIGHT COME ON NOW.
0280	REP 7	LAST 1396	07,3110	14665 1		CADR	SETISSW	(OR GO OFF ON PIPPRE2).
0281	REP 4	LAST 1395	07,3111	1 2557 0		TCP	MODEEXIT	
0282			07,3112	0 0004 0	PIPPRE2	INHINT		PROGRAM DONE WITH PIPAS. DONT LIGHT
0283	REP 58	LAST 1397	07,3113	4 1320 0		CS	IMODES30	ISS WARNING.
0284	REP 79	LAST 1397	07,3114	7 4712 0		MASK	BIT1	
0285	REP 59	LAST 1397	07,3115	27<320 0		ADS	IMODES30	
0286	REP 42	LAST 1396	07,3116	7 4701 1		MASK	BIT10	IF PIP FAIL ON, DO PROG ALSRM AND RESET
0287	REP 377	LAST 1396	07,3117	10 000 0		CCS	A	ISS WARNING.
0288	REP 5	LAST 1397	07,3120	1 2557 0		TCP	MODEEXIT	
0289	REP 40	LAST 1393	07,3121	0 5537 0		TC	ALARM	
0290			07,3122	00212 0		OCT	212	
0291			07,3123	0 0004 0			INHINT	
0292	REP 1		07,3124	1 3107 0		TCP	PIPPRE2	

## L IMU MODE SWITCHING ROUTINES

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P0293 THE FOLLOWING ROUTINE TORGES THE IRIGS ACCORDING TO DOUBLE PRECISION INPUTS IN THE SIX REGISTERS  
 R0295 BEGINNING AT THE ECADR ARRIVING IN A. THE MINIMUM SIZE OF ANY PULSE TRAIN IS 16 PULSES (.25 CDU COUNTS). THE  
 R0297 UNSENT PORTION OF THE COMMAND IS LEFT INTACT IN THE INPUT COMMAND REGISTERS.

0299	E3,1400			EBANK= 1400	VARIABLE, ACTUALLY.
0300 REP 673 LAST 1367	07,3125	54 161 0	IMULSE TS	MPAC +5	
0301 REP 5 LAST 1395	07,3126	0 3455 0	TC	CAGEDSTIJ	DONT PROCEED IF IMU BEING CAGED.
0302 REP 3 LAST 437	07,3127	11*304 0	CCS	LOYRO	
0303 REP 1	07,3130	0 3171 0	TC	GYROBUSY	SLEEP.
0304 REP 674 LAST 1396	07,3131	54 156 1	TS	MPAC +2	
0305 REP 51 LAST 1395	07,3132	3 4705 1	CAP	BITS	
0306 REP 14 LAST 1394	07,3133	0 0006 1	EXTEND		ENABLE THE POWER SUPPLY.
	07,3134	05 014 1	WOR	CHAN14	
0306 REP 20 LAST 1363	07,3135	3 4710 0	CAP	FOUR	
0310 REP 57 LAST 1395	07,3136	0 5140 1	TC	WAITLIST	
0311 REP 21 LAST 1395	E3,1474		EBANK=	CDUIND	(IF A JOB WAS PUT TO SLEEP, THE POWER
0312 REP 1	07,3137	03207 1	2CADR	STRIGYRO	SUPPLY IS LEFT ON BY THE WAKING JOB).
0312 REP 1	07,3140	16103 1			
0313 REP 675 LAST 1396	07,3141	3 0161 1	CA	MPAC +5	SET UP EBANK, SAVING CALLER=S EBANK FOR
0314 REP 56 LAST 1367	07,3142	58 003 1	XCH	EBANK	RESTORATION ON RETURN.
0315 REP 676 LAST 1396	07,3143	56 161 1	XCH	MPAC +5	
0316 REP 4 LAST 1398	07,3144	55*304 0	TS	LGYRO	RESERVES GYROS.
0317 REP 14 LAST 1364	07,3145	7 4373 0	MASK	LOW6	
0316 REP 21 LAST 1393	07,3146	54 061 1	TS	ITEMP1	
0319 REP 73 LAST 1392	07,3147	3 4711 1	CAP	TWO	FORCE SIGN AGREEMENT ON INPUTS.
0320 REP 677 LAST 1398	07,3150	54 157 0	TS	MPAC +3	
0321	07,3151	6 0000 1	DOUBLE		
0322 REP 22 LAST 1398	07,3152	6 0081 0	AD	ITEMP1	
0323 REP 678 LAST 1396	07,3153	54 160 1	TS	MPAC +4	
0324	07,3154	0 0008 1	EXTEND		
0325 REP 378 LAST 1397	07,3155	5 0000 1	INDEX	A	
0326	07,3156	3 1401 0	DCA	1400	
0327 REP 679 LAST 1396	07,3157	52 155 1	DXCH	MPAC	
0328 REP 11 LAST 1299	07,3160	0 7226 0	TC	TPAGR08	
0329 REP 680 LAST 1396	07,3161	52 155 1	DXCH	MPAC	
0330 REP 661 LAST 1398	07,3162	50 160 0	INDEX	MPAC +4	
0331	07,3163	53*401 1	DXCH	1400	
0332 REP 662 LAST 1396	07,3164	10 157 0	CCS	MPAC +3	
0333 REP 1	07,3165	1 3150 1	TCF	GYROAGRE	
0334 REP 683 LAST 1396	07,3166	3 0161 1	CA	MPAC +5	RESTORE CALLER=S EBANK.
0335 REP 59 LAST 1398	07,3167	54 003 0	TS	EBANK	
0336 REP 6 LAST 1397	07,3170	1 2557 0	TCF	MODEEXIT	

## L IMU MODE SWITCHING ROUTINES

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P0337 ROUTINES TO ALLOW TORQUING BY ONLY ONE JOB AT A TIME.

0338			07,3171	0 0006 1	GYROBUSY EXTEND		
0339	REP 20	LAST 1160	07,3172	3 0134 1	DCA	BUP2	
0340	REP 684	LAST 1398	07,3173	52 155 1	DXCH	MPAC	
0341	REP 1		07,3174	3 3208 0	REGSLEEP CAP	LOWAKE	
0342	REP 5	LAST 1294	07,3175	1 5070 1	TCP	JOBSIZEP	
0343	REP 5	LAST 1398	07,3176	11=304 0	GWAKE	CCS	LOYRO
0344	REP 1		07,3177	1 3174 1	TCP	REGSLEEP	WHEN AWAKENED, SEE IF GYROS STILL BUSY. IF SO, SLEEP SOME MORE.
0345	REP 685	LAST 1399	07,3200	54 156 1	TS	MPAC +2	
0346			07,3201	0 0006 1	EXTEND		
0347	REP 686	LAST 1399	07,3202	3 0155 0	DCA	MPAC	
0348	REP 21	LAST 1399	07,3203	52 134 0	DXCH	BUP2	
0349	REP 160	LAST 1384	07,3204	3 4712 1	CAP	ONE	
0350	REP 1		07,3205	1 3138 1	TCP	GWAKE2	
0351	REP 1		07,3206	17176 1	LOWAKE	CADR	GWAKE

SAVE RETURN 2PCADR.

RESTORE SWRETURN INFO.

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## L IMU MODE SWITCHING ROUTINES

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## P0352 GYRO-TORQUING WAITLIST TASKS.

0353	REP	1	07,3207	4 3430 1	STRTGYRO CS	GDESELECT	DE-SELECT LAST GYRO.
0354			07,3210	0 0006 1	EXTEND		
0355	REP	15 LAST 1398	07,3211	03 014 1	WAND	CHAN14	
0356	REP	6 LAST 1395	07,3212	0 3443 1	TC	CAGETEST	
0357	REP	6 LAST 1399	07,3213	3 1304 1	STRTGYR2 CA	LGYRO	JUMP ON PHASE COUNTER IN BITS 13-14.
0358			07,3214	0 0006 1	EXTEND		
0359	REP	46 LAST 1398	07,3215	7 4707 1	MP	BIT4	
0360	REP	379 LAST 1398	07,3216	50 000 1	INDEX	A	
0361			07,3217	1 3220 0	TCP	+1	
0362	REP	1	07,3220	0 3235 0	TC	GSELECT	=0. DO Y GYRO.
0363			07,3221	00202 1	OCT	00202	
0364	REP	2 LAST 1400	07,3222	0 3235 0	TC	GSELECT	=1. DO Z GYRO.
0365			07,3223	00302 0	OCT	00302	
0366	REP	3 LAST 1400	07,3224	0 3233 0	TC	GSELECT -2	=2. DO X GYRO.
0367			07,3225	00100 0	OCT	00100	
0368	REP	258 LAST 1397	07,3226	3 4714 1	CAP	ZERO	=3. DONE
0369	REP	7 LAST 1400	07,3227	55-304 0	TS	LOYRO	
0370	REP	2 LAST 1399	07,3230	3 3208 0	CAP	LOWAKE	
0371	REP	6 LAST 1294	07,3231	0 5074 1	TC	JOBWAKE	WAKE A POSSIBLE SLEEPING JOB.
0372	REP	2 LAST 1395	07,3232	1 3034 1	NORESET TCP	IMUPINED	DO NOT RESET POWER SUPPLY

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0373	REP	21	LAST 1398	07,3233	4 4710 1	-2	CS ADS	FOUR LOYRO	SPECIAL ENTRY TO REGRESS LOYRO FOR X.
0374	REP	8	LAST 1400	07,3234	27=304 0				
0375	REP	323	LAST 1398	07,3235	50 002 0	GSELECT	INDEX Q CAF 0		SELECT GYRO.
0376				07,3236	3 0000 1				PACKED WORD CONTAINS GYRO SELECT BITS
0377	REP	4	LAST 1379	07,3237	54 084 1		TS ITEMP4		AND INCREMENT TO LOYRO.
0378	REP	20	LAST 1371	07,3240	7 4716 1		MASK SEVEN		
0379	REP	49	LAST 1398	07,3241	8 4876 1		AD BIT13		
0380	REP	9	LAST 1401	07,3242	27=304 0		ADS LOYRO		
0381	REP	60	LAST 1398	07,3243	54 003 0		TS EBANK		
0382	REP	15	LAST 1398	07,3244	7 4373 0		MASK LOW8		
0383	REP	23	LAST 1398	07,3245	54 081 1		TS ITEMP1		
0384	REP	21	LAST 1401	07,3246	4 4716 1		CS SEVEN		
0385	REP	5	LAST 1401	07,3247	7 0084 1		MASK ITEMP4		
0386	REP	6	LAST 1401	07,3250	54 084 1		TS ITEMP4		
0387				07,3251	0 0008 1	EXTEND			MOVE DP COMMAND TO RUPTRREGS FOR TESTING.
0388	REP	24	LAST 1401	07,3252	5 0081 0		INDEX ITEMP1		
0389				07,3253	3 1401 0		DCA 1400		
0390	REP	28	LAST 1379	07,3254	52 071 0		DXCH RUPTRREG1		
0391	REP	29	LAST 1401	07,3255	10 070 1		CCS RUPTRREG1		
0392	REP	1		07,3256	1 3271 1		TCP MAJ+		
0393				07,3257	1 3281 0		TCP +2		
0394	REP	1		07,3260	1 3411 1		TCP MAJ-		
0395	REP	7	LAST 1379	07,3261	10 071 0		CCS RUPTRREG2		
0396	REP	1		07,3262	1 3266 1		TCP MIN+		
0397	REP	1		07,3263	1 3213 0		TCP STRIGYR2		
0398	REP	1		07,3264	1 3408 1		TCP MIN-		
0399	REP	2	LAST 1401	07,3265	1 3213 0		TCP STRIGYR2		

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## L IMU MODE SWITCHING ROUTINES

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0400	REP 1	07,3266	6 3322 1	MIN+	AD -GYROMIN	
0401		07,3267	0 0006 1		EXTEND	
0402	REP 3 LAST 1401	07,3270	6 3213 1		B2NP STRTGYR2	SMALL POSITIVE COMMAND. SEE IF AT LEAST 16 GYRO PULSES.
0403		07,3271	0 0006 1	MAJ+	EXTEND	
0404	REP 1	07,3272	3 3432 1		DCA GYOPRAC	DEFINITE POSITIVE OUTPUT.
0405	REP 30 LAST 1401	07,3273	20 071 0		DAS RUPTRREG1	
0406	REP 7 LAST 1401	07,3274	3 0064 0		CA ITEMP4	
0407		07,3275	0 0006 1		EXTEND	
0408	REP 16 LAST 1400	07,3276	05 014 1		WOR CHAN14	SELECT POSITIVE TORQUING FOR THIS GYRO.
0409	REP 10 LAST 1367	07,3277	3 6043 0		CAP LOW7	
0410	REP 6 LAST 1401	07,3300	7 0071 0		MASK RUPTRREG2	
0411	REP 9 LAST 1402	07,3301	56 071 1		XCH RUPTRREG2	
0412		07,3302	0 0006 1	QMERGE	EXTEND	LEAVE NUMBER OF POSSIBLE 6192 AUGMENTS TO INITIAL COMMAND IN MAJOR PART OF LONG TERM STORAGE AND TRUNCATED FRACTION IN MINOR PART. THE MAJOR PART WILL BE COUNTED DOWN TO ZERO IN THE COURSE OF PUTTING OUT THE ENTIRE COMMAND.
0413	REP 30 LAST 1376	07,3303	7 4703 0		MP BIT8	
0414	REP 17 LAST 1379	07,3304	54 062 1		TS ITEMP2	
0415	REP 31 LAST 1402	07,3305	3 0070 0		CA RUPTRREG1	
0416		07,3306	0 0006 1		EXTEND	
0417	REP 35 LAST 1369	07,3307	7 4702 1		MP BIT9	
0418	REP 32 LAST 1402	07,3310	54 070 1		TS RUPTRREG1	
0419	REP 225 LAST 1391	07,3311	3 0001 0		CA L	
0420		07,3312	0 0006 1		EXTEND	
0421	REP 76 LAST 1363	07,3313	7 4675 0		MP BIT14	
0422	REP 18 LAST 1402	07,3314	26 062 1		ADS ITEMP2	INITIAL COMMAND.
0423		07,3315	0 0006 1		EXTEND	
0424	REP 33 LAST 1402	07,3316	3 0071 1		DCA RUPTRREG1	SEE IF MORE THAN ONE PULSE TRAIN NEEDED (MORE THAN 16363 PULSES).
0425	REP 1	07,3317	6 7716 0		AD MINUS1	
0426	REP 380 LAST 1400	07,3320	10 000 0		CCS A	
0427	REP 1	07,3321	1 3345 1		TCP LNOGYRO	
0428		07,3322	77601 0	-GYROMIN	OCT -176	
0429		07,3323	1 3327 0		TCP +4	MAY BE ADJUSTED TO SPECIFY MINIMUM CMD
0430	REP 77 LAST 1402	07,3324	3 4675 1		CAP BIT14	
0431	REP 19 LAST 1402	07,3325	26 062 1		ADS ITEMP2	
0432	REP 259 LAST 1400	07,3326	3 4714 1		CAP ZERO	
0433	REP 25 LAST 1401	07,3327	50 061 0	+4	INDEX ITEMP1	
0434		07,3330	53 401 1		DXCH 1400	

## L INU MODE SWITCHING ROUTINES

0435	REP 20	LAST 1402	07,3331 3 0062 0		CA	I TEMP2	ENTIRE COMMAND.
0436	REP 3	LAST 1394	07,3332 54 047 0	LASTSEG	TS	GYROCMD	
0437			07,3333 0 0006 1		EXTEND		
0438	REP 43	LAST 1397	07,3334 7 4701 1		MP	BIT10	
0439	REP 47	LAST 1387	07,3335 6 6214 0		AD	THREE	
0440	REP 58	LAST 1398	07,3336 0 5140 1		TC	WAITLIST	
0441	REP 22	LAST 1396	E3,1474		BRANK=	CDUIND	
0442	REP 2	LAST 1396	07,3337 03207 1		ZADR	STRGYRO	
0443			07,3340 16103 1				
0446	REP 44	LAST 1403	07,3341 3 4701 0	GYROEXIT	CAF	BIT10	
0449			07,3342 0 0006 1		EXTEND		
0450	REP 17	LAST 1402	07,3343 05 014 1		WOR	CHAN14	
0451	REP 70	LAST 1396	07,3344 1 5213 0		TCP	TASKOVER	
0452	REP 26	LAST 1402	07,3345 50 061 0	LONGGYRO	INDEX	I TEMP1	
0453			07,3346 53=401 1		DXCH	1400	
0454	REP 78	LAST 1402	07,3347 3 4675 1		CAP	BIT14	
0455	REP 21	LAST 1403	07,3350 6 0062 0		AD	I TEMP2	
0456	REP 4	LAST 1403	07,3351 54 047 0		TS	GYROCMD	
0457			07,3352 0 0006 1	AUG3	EXTEND		
0458	REP 45	LAST 1403	07,3353 7 4701 1		MP	BIT10	
0459	REP 4	LAST 1384	07,3354 6 7714 1		AD	NE23	
0460	REP 59	LAST 1403	07,3355 0 5140 1		TC	WAITLIST	
0461	REP 23	LAST 1403	E3,1474		BRANK=	CDUIND	
0462	REP 1		07,3356 03381 0		ZADR	6192AUG	
0462	REP 1		07,3357 16103 1		TOP	GYROEXIT	
0463	REP 1		07,3360 1 3341 0				
0464	REP 7	LAST 1400	07,3361 0 3443 1	8192AUG	TC	CAGETEST	
04641	REP 47	LAST 1400	07,3362 3 4707 0		CAF	BIT4	
04642			07,3363 0 0006 1		EXTEND		
04643	REP 4T	LAST 1398	07,3364 02 012 0		RAND	CHAN12	
04644	REP 381	LAST 1402	07,3365 10 000 0		CCS	A	
04645	REP 3	LAST 1393	07,3366 1 3441 1		TOP	IMURAD	
0465	REP 10	LAST 1401	07,3367 3 1304 1		CA	LOYRO	
0466	REP 61	LAST 1401	07,3370 54 003 0		TS	BRANK	
0467	REP 16	LAST 1401	07,3371 7 4373 0		MASK	LOW6	
0466	REP 27	LAST 1403	07,3372 54 061 1		TS	I TEMP1	
0469	REP 28	LAST 1403	07,3373 50 061 0		INDEX	I TEMP1	SEE IF THIS IS THE LAST AUG.
0470			07,3374 11=400 0		CCS	1400	
0471	REP 1		07,3375 1 3401 0		TOP	AUG2	MORE TO COME.
0472	REP 79	LAST 1403	07,3376 3 4675 1		CAP	BIT14	
0473	REP 5	LAST 1403	07,3377 26 047 0		ADS	GYROCMD	
0474	REP 1		07,3400 1 3333 0		TOP	LASTSEG +1	

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L IMU MODE SWITCHING ROUTINES

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8475	REP	29	LAST	1403	07,3401	50 061 0	AUG2	INDEX	ITEMP1
8476					07,3402	55 400 0		TS	1400
8477	REP	80	LAST	1403	07,3403	3 4675 1		CAP	BIT14
8478	REP	6	LAST	1403	07,3404	26 047 0		ADS	GYROCMD
8479	REP	1			07,3405	1 3352 1		TCP	AUG3

COMPUTE DT.

## L IMU MODE SWITCHING ROUTINES

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0480	RESP	2	LAST 1402	07,3406	6 3322 1	MIN-	AD	-GYROMIN	POSSIBLE NEGATIVE OUTPUT.
0481				07,3407	0 0006 1		EXTEND		
0482	RESP	4	LAST 1402	07,3410	6 3213 1		B2MF	STRTGYR2	
0483				07,3411	0 0006 1	MAJ-	EXTEND		DEFINITE NEGATIVE OUTPUT.
0484	RESP	2	LAST 1402	07,3412	4 3432 0		DCS	GYROPRAC	
0485	RESP	34	LAST 1402	07,3413	20 071 0		DAS	RUPTREG1	
0486	RESP	8	LAST 1402	07,3414	3 0064 0		CA	ITEMP4	SELECT NEGATIVE TORQUING FOR THIS GYRO.
0487	RESP	36	LAST 1402	07,3415	6 4702 0		AD	BIT9	
0488				07,3416	0 0006 1		EXTEND		
0489	RESP	18	LAST 1403	07,3417	05 014 1		WOR	CHAN14	
0490	RESP	35	LAST 1405	07,3420	4 0070 1		CS	RUPTREG1	SET UP RUPTREGS TO FALL INTO GMERGE.
0491	RESP	36	LAST 1405	07,3421	54 070 1		TS	RUPTREG1	ALL NUMBERS PUT INTO GYROCMD ARE
0492	RESP	10	LAST 1402	07,3422	4 0071 0		CS	RUPTREG2	POSITIVE - BIT9 OF CHAN 14 DETERMINES
0493	RESP	11	LAST 1402	07,3423	7 6043 1		MASK	LOWT	THE SIGN OF THE COMMAND.
0494				07,3424	4 0000 0		COM		
0495	RESP	11	LAST 1405	07,3425	56 071 1		XCH	RUPTREG2	
0496				07,3426	4 0000 0		COM		
0497	RESP	1		07,3427	1 3302 1		TCP	GMERGE	
0498				07,3430	01700 1	GDESELECT OCT	1700		TURN OFF SELECT AND ACTIVITY BITS.
0499				07,3431	00000 1	GYROPRAC 2DEC	.215 B -21		
0499				07,3432	00034 0				

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## L IMU MODE SWITCHING ROUTINES

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P0500 IMU MODE SWITCHING ROUTINES COME HERE WHEN ACTION COMPLETE

0501				07,3433	0 0006 1	ENDIMU	EXTEND		
0502	REF	33	LAST	1190	07,3434	00 011 1	READ	DSALMOUT	MODE IS BAD IF CAGE HAS OCCURED OR IP ISS WARNING IS ON.
0503	REF	80	LAST	1397	07,3435	7 4712 0	MASK	BIT1	
0504	REF	382	LAST	1403	07,3436	10 000 0	CCS	A	
0505	REF	4	LAST	1403	07,3437	1 3441 1	TCP	IMUBAD	
0506	REF	3	LAST	578	07,3440	1 3467 0	IMUGOOD	TCP	GOODEND WITH C(A) = 0.
0507	REF	260	LAST	1402	07,3441	3 4714 1	IMUBAD	CAP	ZERO
0508	REF	2	LAST	578	07,3442	1 3464 0	TCP	CAP	BADEND
0509	REF	52	LAST	1398	07,3443	3 4705 1	CAGETEST	CAP	BIT8
0510	REF	60	LAST	1397	07,3444	7 1320 0	MASK	IMODES30	SUBROUTINE TO TERMINATE IMU MODE SWITCH IF IMU HAS BEEN CAGED.
0511	REF	383	LAST	1406	07,3445	10 000 0	CCS	A	
0512	REF	5	LAST	1406	07,3446	1 3441 1	TCP	IMUBAD	DIRECTLY.
0513	REF	324	LAST	1401	07,3447	0 0002 0	TC	Q	WITH C(A) = +0.
0514	REF	61	LAST	1406	07,3450	4 1320 0	CAGETSTQ	CS	IMODES30
0515	REF	53	LAST	1406	07,3451	7 4705 0	MASK	BIT8	SKIP IF IMU NOT BEING CAGED.
0516	REF	384	LAST	1406	07,3452	10 000 0	CCS	A	
0517	REF	325	LAST	1406	07,3453	24 002 0	INCR	Q	
0518	REF	326	LAST	1406	07,3454	0 0002 0	TC	Q	
0519	REF	62	LAST	1406	07,3455	4 1320 0	CAGETSTJ	CS	IMODES30
0520	REF	54	LAST	1406	07,3456	7 4705 0	MASK	BIT8	IP DURING MODE SWITCH INITIALIZATION IT IS FOUND THAT THE IMU IS BEING CAGED,
0521	REF	385	LAST	1406	07,3457	10 000 0	CCS	A	SET IMUCADR TO -0 TO INDICATE OPERATION COMPLETE BUT FAILED. RETURN IMMEDIATELY
0522	REF	327	LAST	1406	07,3460	0 0002 0	TC	Q	
0523	REF	281	LAST	1406	07,3461	4 4714 0	CS	ZERO	TO SWRETURN.
0524	REF	3	LAST	1195	07,3462	55<322 1	TS	IMUCADR	
0525	REF	7	LAST	1398	07,3463	1 2557 0	TCP	MODEEXIT	

## L. IMU MODE SWITCHING ROUTINES

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P0526 GENERALIZED MODE SWITCHING TERMINATION. ENTER AT GOODEND FOR SUCCESSFUL COMPLETION OF AN I/O OPERATION  
 R0526 OR AT BADEND FOR A N UNSUCCESSFUL ONE. C(A) OR ARRIVAL =0 FOR IMU, 1 FOR OPTICS.

0530	REP 12	LAST 1405	07,3464	54 071 0	BADEND	TS	RUPTREG2	DEVICE INDEX.
0531	REP 262	LAST 1406	07,3465	4 4714 0		CS	ZERO	FOR FAILURE.
0532	REP 4	LAST 1406	07,3466	1 3471 1		TCP	GOODEND +2	
0533	REP 13	LAST 1407	07,3467	54 071 0	GOODEND	TS	RUPTREG2	
0534	REP 161	LAST 1399	07,3470	4 4712 0		CS	ONE	FOR SUCCESS.
0535	REP 6	LAST 1379	07,3471	54 072 0		TS	RUPTREG3	
0536	REP 14	LAST 1407	07,3472	50 071 1		INDEX	RUPTREG2	SEE IF USING PROGRAM ASLEEP.
0537	REP 5	LAST 237	07,3473	11=322 1		CCS	MODECADR	
0538			07,3474	1 3476 0		TCP	+2	YES - WAKE IT UP.
0539	REP 1		07,3475	1 3506 0		TCP	ENDMODE	IP 0, PROGRAM NOT IN YET.
0540	REP 263	LAST 1407	07,3476	3 4714 1		CAP	ZERO	WAKE SLEEPING PROGRAM.
0541	REP 15	LAST 1407	07,3477	50 071 1		INDEX	RUPTREG2	
0542	REP 6	LAST 1407	07,3500	57=322 0		XCH	MODECADR	
0543	REP 7	LAST 1400	07,3501	0 5074 1		TC	JOBWAKE	
0544	REP 7	LAST 1407	07,3502	4 0072 0		CS	RUPTREG3	ADVANCE LOC IF SUCCESSFUL.
0545	REP 23	LAST 1294	07,3503	50 084 0		INDEX	LOCCTR	
0546	REP 41	LAST 1190	07,3504	28 184 0		ADS	LOC	
0547	REP 71	LAST 1403	07,3505	1 5213 0		TCP	TASKOVER	
0548	REP 6	LAST 1407	07,3506	3 0072 1	ENDMODE	CA	RUPTREG3	-0 INDICATES OPERATION COMPLETE BUT
0549	REP 16	LAST 1407	07,3507	50 071 1		INDEX	RUPTREG2	UNSUCCESSFUL - -1 INDICATES COMPLETE AND
0550	REP 7	LAST 1407	07,3510	55=322 1		TS	MODECADR	SUCCESSFUL.
0551	REP 72	LAST 1407	07,3511	1 5213 0		TCP	TASKOVER	

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L IMU MODE SWITCHING ROUTINES

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P0552 GENERAL STALLING ROUTINE. USING PROGRAMS COME HERE TO WAIT FOR I/O COMPLETION.

R0554 PROGRAM DESCRIPTION

DATE- 21 FEB 1967

R0555 LOG SECTION IMU MODE SWITCHING

R0556 MOD BY- R.MELANSON TO ADD DOCUMENTATION

ASSEMBLY SUNDISK REV. 82

R0557 FUNCTIONAL DESCRIPTION-

R0558 TO DELAY FURTHER EXECUTION OF THE CALLING ROUTINE UNTIL ITS SELECTED  
R0559 I/O FUNCTION IS COMPLETE. THE FOLLOWING CHECKS ON THE CALLING ROUTINE'S  
R0560 MODECADR ARE MADE AND ACTED UPON.

- 1) +0 INDICATES INCOMPLETE I/O OPERATION. CALLING ROUTINE IS PUT TO  
R0562 SLEEP.
- 2) -1 INDICATES COMPLETED I/O OPERATION. STALL BYPASSES JOBSLEEP  
R0564 CALL AND RETURNS TO CALLING ROUTINE AT L+3
- 3) -0 INDICATES COMPLETED I/O WITH FAILURE. STALL CLEARS MODECADR  
R0566 AND RETURNS TO CALLING ROUTINE AT L+2.
- 4) VALUE GREATER THAN 0 INDICATES TWO ROUTINES CALLING FOR USE OF  
R0567 SAME DEVICE. STALL EXITS TO ABORT WHICH EXECUTES A PROGRAM  
R0568 RESTART WHICH IN TURN CLEARS ALL MODECADR REGISTERS.

R0570 CALLING SEQUENCE-

R0571 L TC BANKCALL

R0572 L+1 CADR (ONE OF 5 STALL ADDRESSES I.E. IMUSTALL, OPTSTALL, RADSTALL,  
R0573 AOTSTALL, OR ATTSTALL)

R0574 NORMAL-EXIT MODE-

R0575 TCP JOBSLEEP OR TCP MODEXIT

R0576 ALARM OR ABORT EXIT MODE-

R0577 TC ABORT

R0578 OUTPUT-

R0579 MODECADR= CADR IF JOBSLEEP  
R0580 MODECADR=+0 IF I/O COMPLETE  
R0581 BUF2=L+3 IF I/O COMPLETE AND GOOD.  
R0582 BUF2=L+2 IF I/O COMPLETE BUT FAILED.

R0583 ERASABLE INITIALIZATION-

R0584 BUF2 CONTAINS RETURN ADDRESS PLUS 1,(L+2)  
R0585 BUF2+1 CONTAINS PBANK VALUE OF CALLING ROUTINE.  
R0588 MODECADR OF CALLING ROUTINE CONTAINS +0,-1,-0 OR CADR RETURN ADDRESS.

R0587 DEBRIS-

R0588 RUPTRREG2 AND CALLING ROUTINE MODECADR.

0589 REP 162 LAST 1407 07,3512 3 4712 1 AOTSTALL CAP ONE AOT.

0590 REP 1 07,3513 0 3517 1 TC STALL

0591 REP 74 LAST 1398 07,3514 3 4711 1 RADSTALL CAP TWO

0592 REP 2 LAST 1408 07,3515 1 3517 0 TCP STALL

## L IMU MODE SWITCHING ROUTINES

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0593	REF 1		07,3512	OPTSTALL EQUALS AUTSTALL				
0594	REF 264	LAST 1407	07,3516	3 4714 1	IMUSTALL CAF	ZERO		IMU.
0595			07,3517	0 0004 0	STALL	INHINT		
0596	REF 17	LAST 1407	07,3520	54 071 0	TS	RUPTREG2		SAVE DEVICE INDEX.
0597	REF 386	LAST 1408	07,3521	50 000 1	INDEX	A		SEE IF OPERATION COMPLETE.
0598	REF 8	LAST 1407	07,3522	11<322 1	CCS	MODECADR		
0599	REF 1		07,3523	1 3541 0	TCP	MODABORT		ALLOWABLE STATES ARE +0, -1, AND -0.
0600	REF 1		07,3524	1 3535 0	TCP	MODESLP		OPERATION INCOMPLETE.
0601	REF 1		07,3525	1 3531 1	TCP	MODEGOOD		COMPLETE AND GOOD IF = -1.
0602	REF 18	LAST 1409	07,3526	50 071 1	MG2	INDEX	RUPTREG2	COMPLETE AND FAILED IF = 0. RESET TO +0.
0603	REF 9	LAST 1409	07,3527	55<322 1	TS	MODECADR		RETURN TO CALLER.
0604	REF 8	LAST 1408	07,3530	1 2557 0	TCP	MODEEXIT		
0605	REF 387	LAST 1409	07,3531	10 000 0	MODEGOOD	CCS	A	MAKE SURE INITIAL STATE -1.
0606	REF 2	LAST 1409	07,3532	1 3541 0	TCP	MODABORT		
0607	REF 22	LAST 1399	07,3533	24 133 0		INCR	BUF2	IF SO, INCREMENT RETURN ADDRESS AND
0608	REF 1		07,3534	1 3526 1	TCP	MG2		RETURN IMMEDIATELY, SETTING CADR = +0.
0609	REF 5	LAST 730	07,3535	0 4604 1	MODESLP	TC	MAKECADR	CALL FROM SWITCHABLE FIXED ONLY.
0610	REF 19	LAST 1409	07,3536	50 071 1	INDEX	RUPTREG2		
0611	REF 10	LAST 1409	07,3537	55<322 1	TS	MODECADR		
0612	REF 6	LAST 1399	07,3540	1 5070 1	TCP	JOBSEEP		
0613	REF 4	LAST 1154	07,3541	0 5622 1	MODABORT	TC	POODOO	TWO PROGRAMS USING SAME DEVICE.
0614			07,3542	01210 0	OCT		1210	

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## L IMU MODE SWITCHING ROUTINES

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## P0615 CONSTANTS FOR MODE SWITCHING ROUTINES

0616 REP 4 LAST 1011	5656	BITS3d4 = OCT14	
0617 REP 5 LAST 1384	4726	BITS4d6 = OCT50	
0618	07,3543 00030 1	BITS4-5 OCT 00030	
0619 REP 31 LAST 1402	4703	IMUSEPLG EQUALS BIT8	
0620	07,3544 77500 1	-COMM+ DEC -191	
0621	07,3545 77477 0	-COMM- DEC -192	
0622	07,3546 00074 1	600MS DEC 60	
0623 REP 3 LAST 417	07,3012	IMUFIN20 = IMUFINE	
0624 REP 4 LAST 411	07,3547 3 1325 1	00MANUR CA ATTCAADR	IS KALOMANU PREB
0625	07,3550 0 0008 1	EXTEND	
0626	07,3551 1 3554 1	BZF +3	
0627 REP 5 LAST 1409	07,3552 0 5622 1	TC POODOO	NO
0628	07,3553 01210 0	OCT 1210	2 TRYING TO USE SAME DEVICE
0629	07,3554 0 0008 1	+3 EXTEND	
0630 REP 23 LAST 1409	07,3555 3 0134 1	DCA BUP2	
0632 REP 5 LAST 1410	07,3556 53=328 0	DXCH ATTCAADR	SAVE FINAL RETURN FOR KALOMAN3
0633 REP 34 LAST 1379	07,3557 3 0008 1	CA EBANK	
0634 REP 22 LAST 1401	07,3560 7 4718 1	MASK SEVEN	
0635 REP 6 LAST 1410	07,3561 27=328 0	ADS ATTCAADR +1	
0642 REP 27 LAST 1166	07,3562 3 0187 1	CA PRIORITY	
0643 REP 2 LAST 196	07,3563 7 7874 1	MASK PRI037	
0644 REP 2 LAST 411	07,3564 55=327 1	TS ATTPRIO	SAVE USERS PRIO
06452 REP 1	07,3565 3 3571 1	CAP KALEBCON	SET EBANK FOR KALOMAN3
06453 REP 62 LAST 1403	07,3566 54 003 0	TS EBANK	
06454 REP 62 LAST 1385	07,3567 0 4574 0	TC POSTJUMP	
06455 REP 1	07,3570 44000 1	CADR KALOMAN3	
06456 REP 18 LAST 410	07,3571 03261 1	KALEBCON BCADR BCDU	

## L IMU MODE SWITCHING ROUTINES

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P0646 PROGRAM DESCRIPTION  
 R0647 IMU STATUS CHECK ROUTINE R02 (SUBROUTINE UTILITY)  
 R0648 MOD NO - 1  
 R0649 MOD BY - N.BRODEUR  
 R0650 FUNCTIONAL DESCRIPTION  
 R0651 TO CHECK WHETHER IMU IS ON AND IF ON WHETHER IT IS ALIGNED TO AN  
 R0652 ORIENTATION KNOWN BY THE CMC. TO REQUEST SELECTION OF THE APPROPRIATE  
 R0653 PROGRAM IF THE IMU IS OFF OR NOT ALIGNED TO AN ORIENTATION KNOWN BY THE  
 R0654 CMC. CALLED THROUGH BANKCALL  
 R0655 CALLING SEQUENCE-  
 R0656  
 R0657 L TC BANKCALL  
 R0658 L+1 CADR R02BOTH  
 R0660 SUBROUTINES CALLED  
 R0661  
 R0662 VARALARM  
 R0663 PLAGUP  
 R0664 NORMAL EXIT MODES  
 R0665  
 R0666 AT L+2 OF CALLING SEQUENCE  
 R0667 ALARM OR ABORT EXIT MODES  
 R0668 GOTOP00H, WITH ALARM  
 R0673 ERASABLE INITIALIZATION REQUIRED  
 R0674  
 R0675 NONE  
 R0676 DEBRIS  
 R0677  
 R0678 CENTRAL-A,Q,L  
 0679 34,3775  
 0680 REF 1 07,2000  
 0681 07,3572  
 0682 REF 1  
 0683 07,3572 00063 1 DEC51  
 0684 REF 50 LAST 1401 07,3573 3 4676 1 R02BOTH  
 0685 REF 51 LAST 1168 07,3574 7 0077 0  
 0686 REF 388 LAST 1409 07,3575 10 000 0  
 0687 REF 2 LAST 722 07,3576 0 3607 0  
 0688 REF 63 LAST 1408 07,3577 3 1320 1  
 0689 REF 37 LAST 1405 07,3600 7 4702 1  
 0690 07,3601 0 0008 1  
 0691 07,3602 1 3604 1  
 0692 REF 48 LAST 1403 07,3603 4 4707 1  
 0693 REF 1 07,3604 8 3612 1  
 0694 REF 3 LAST 853 07,3605 0 5851 0  
 0695 REF 70 LAST 853 07,3606 0 4106 1  
 BANK 34  
 SETLOC R02  
 BANK  
 COUNT 04/R02  
 COUNT\*  
 DEC 51  
 CAF BIT13  
 MASK STATE +3  
 CCS A  
 TC R02ZERO  
 REFSMPLG  
 ZERO IMUS  
 CA IMODES30  
 MASK BIT9  
 EXTEND  
 BZP +2  
 CS BIT4  
 AD OCT220  
 SEND IMU ALARM CODE 210  
 SEND REFSMM ALARM  
 TC VARALARM  
 GOTOP00H

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L IMU MODE SWITCHING ROUTINES

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0700	REP	52	LAST	1328	07,3607	0	5435	0	R02ZERO	TC	UPFLAG
0701	REP	4	LAST	420	07,3610	00007	0		ADRES	IMUSE	
0702	REP	9	LAST	1397	07,3611	1	4570	0	TCP	SWRETURN	
07025					07,3612	00220	1	OCT220	OCT	220	

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L IMU MODE SWITCHING ROUTINES

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R0703 PROGRAM DESCRIPTION P06 10FEB67

R0704 TRANSFER THE ISS/CMC FROM THE OPERATE TO THE STANDBY CONDITION.

R0705 THE NORMAL CONDITION OF READINESS OF THE GNCS WHEN NOT IN USE IS STANDBY. IN THIS CONDITION THE IMU  
R0707 HEATER POWER IS ON. THE IMU OPERATE POWER IS OFF. THE COMPUTER POWER IS ON. THE OPTICS POWER IS OFF. THE  
R0709 CMC STANDBY ON THE MAIN AND LEB DISKYS IS ON.

R0710 CALLING SEQUENCE'

R0711 ASTRONAUT REQUEST THROUGH DSKY V37E 06E.

R0712 SUBROUTINES CALLED'

R0713 GOPERF1

R0716 BANKCALL

R0719 FLAGDOWN

## L IMU MODE SWITCHING ROUTINES

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P0810 PRESTAND PREPARES FOR STANDBY BY SNAPSHOTTING THE SCALER AND TIME<sub>1</sub> TIME<sub>2</sub>  
 R0811 THE LOW 5 BITS OF THE SCALER ARE INSPECTED TO INSURE COMPATABILITY  
 R0812 BETWEEN THE SCALER READING AND THE TIME<sub>1</sub> TIME<sub>2</sub> READING.

08125	REF 1	26,2000	SETLOC P05P08	
08126		26,3655	BANK	
0813	REF 3 LAST 202	1150	EBANK= TIME <sub>2</sub> SAV	
0814	REF 1		COUNT* \$\$/P06	
08145	REF 53 LAST 1412	26,3655 0 5435 0 P06	TC UPPLAG	SET NODOV37 BIT
08146	REF 3 LAST 1284	26,3658 00054 0	ADRES NODOPLAG	
0815		26,3657 0 0004 0	PRESTAND INHINT	
0816		26,3680 0 0008 1	EXTEND	
0817	REF 31 LAST 1386	26,3681 3 0025 0	DCA TIME <sub>2</sub>	
0818	REF 4 LAST 1414	26,3682 53x151 1	DCH TIME <sub>2</sub> SAV	SNAPSHOT TIME <sub>1</sub> TIME <sub>2</sub>
0819	REF 1	26,3683 0 3714 0	TC SCALPREP	
0820	REF 1	26,3684 0 3857 0	TC PRESTAND	T <sub>1</sub> , T <sub>2</sub> , SCALER NOT COMPATIBLE
0821	REF 687 LAST 1399	26,3685 52 155 1	DCH MPAC	T <sub>1</sub> , T <sub>2</sub> AND SCALER OK
0822	REF 1	26,3686 53x153 0	DCH SCALSAVE	STORE SCALER
0823		26,3687 0 0004 0	INHINT	
0824	REF 246 LAST 1037	26,3670 0 4555 0	TC BANKCALL	
0825	REF 3 LAST 150	26,3671 18777 1	CADR RNDREFDR	REFSMM, DRIFT, TRACK FLAGS DOWN
0828	REF 55 LAST 1284	26,3672 0 5447 0	TC DOWNFLAG	
0827	REF 5 LAST 1412	26,3673 00007 0	ADRES IMUSE	IMUSE DOWN
08271	REF 58 LAST 1414	26,3674 0 5447 0	TC DOWNFLAG	
08272	REF 5 LAST 610	26,3675 00010 0	ADRES RNDVZFLG	RNDVZFLG DOWN
0828	REF 37 LAST 1390	26,3678 3 4700 1	CAP BIT11	
0829		26,3677 0 0008 1	EXTEND	
0830	REF 14 LAST 1088	26,3700 05 013 0	WOR CHAN13	SET STANDBY ENABLE BIT
0831	REF 101 LAST 1377	26,3701 0 5301 0	TC PHASCHNG	
0832		26,3702 07024 0	OCT 07024	SET RESTART TO POSTAND WHEN STANDBY
0833		26,3703 20000 0	OCT 20000	RECOVERS
08335	REF 2 LAST 1414	1152	EBANK= SCALSAVE	
0834	REF 1	26,3704 03734 1	2CADR POSTAND	
0834	REF 1	26,3705 54102 0		
0835	REF 1	26,3706 3 4731 0	CAP OCT62	
0838	REF 247 LAST 1414	26,3707 0 4555 0	TC BANKCALL	
0837	REF 7 LAST 736	26,3710 20751 0	CADR GOPERF1	
0838		26,3711 1 3708 1	TCP -3	
0839		26,3712 1 3708 1	TCP -4	
0840		26,3713 1 3708 1	TCP -5	
08405	REF 9 LAST 1037	4731 OCT62	EQUALS .5SEC	DEC 50 = OCT 62

R0841 THE LOW 5 BITS OF THE SCALER READS 10000 FOR THE FIRST INTERVAL AFTER A

## L IMU MODE SWITCHING ROUTINES

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R0842 T1 INCREMENT. IF SCALPREP DETECTS THIS INTERVAL THE T1,T2 AND SCALER  
 R0843 DATA ARE NOT COMPATABLE AND RETURN IS TO L+1 FOR ANOTHER READING OF THE  
 R0844 DATA. OTHERWISE, THE RETURN IS TO L+2 TO PROCEED. ROUTINE ALSO PREPARES  
 R0845 THE SCALER READING FOR COMPUTATION OF THE INCREMENT TO UPDATE T1T2. (THE  
 R0846 10 MS BIT (BIT 6) OF THE SCALER IS INCREMENTED 5 MS OUT OF PHASE FROM  
 R0847 T1.) ADDITION OF 5 MS (BIT 5) TO THE SCALER READING HAS THE EFFECT OF  
 R0848 ADJUSTING BIT 6 IN THE SCALER TO BE IN PHASE WITH BIT 1 OF T1. THE LOW 5  
 R0849 BITS OF THE SCALER READING ARE THEN SET TO ZERO, TO TRUNCATE THE SCALER  
 R0850 DATA TO 10 MS. RESULTS ARE STORED IN MPAC, +1.

0851			26,3714 0 0006 1	SCALPREP EXTEND			
0852	REP 668	LAST 1414	26,3715 22 156 0	XCH MPAC +2			
0853	REP 3	LAST 424	26,3716 0 4527 0	TC FINETIME +1			
0854			26,3717 0 0003 1	RELINT			
0855	REP 689	LAST 1415	26,3720 52 155 1	DXCH MPAC			
0856	REP 44	LAST 1396	26,3721 3 4706 1	CA BITS			ADD 5 MS TO THE SCALER READING.
0857	REP 226	LAST 1402	26,3722 54 001 1	TS L			
0858	REP 265	LAST 1409	26,3723 3 4714 1	CA ZERO			
0859	REP 690	LAST 1415	26,3724 20 155 1	DAS MPAC			
0860	REP 9	LAST 356	26,3725 4 4362 0	CS LOW5			SET LOW 5 BITS OF (SCALER+5MS) TO ZERO
0861	REP 691	LAST 1415	26,3726 7 0155 1	MASK MPAC +1			AND STORE RESULTS IN MPAC,+1.
0862	REP 692	LAST 1415	26,3727 56 155 0	XCH MPAC +1			
0863	REP 10	LAST 1415	26,3730 7 4362 0	MASK LOW5			
A0864							TEST LOW 5 BITS OF SCALER FOR THE FIRST
A0865							INTERVAL AFTER THE T1 INCREMENT
0866	REP 369	LAST 1411	26,3731 10 000 0	CCS A			(NOW = 00000, SINCE BIT 5 ADDED).
0867	REP 693	LAST 1415	26,3732 24 156 0	INCR MPAC +2			IS IT 1ST INTERVAL AFTER T1 INCREMENT
0868	REP 694	LAST 1415	26,3733 0 0156 0	TC MPAC +2			NO
							YES

R0869 POSTAND RECOVERS TIME AFTER STANDBY. THE SCALER IS SNAPSHOTTED AND THE  
 R0870 TIME1 TIME2 COUNTER IS SET TO ZERO. THE LOW 5 BITS OF THE SCALER ARE  
 R0871 INSPECTED TO INSURE COMPATABILITY BETWEEN THE SCALER READING AND THE  
 R0872 CLEARING OF THE TIME COUNTER. IT THEN COMPUTES THE DIFFERENCE IN SCALER  
 R0873 VALUES (IN DP) AND ADDS THIS TO THE PREVIOUSLY SNAPSHOTTED VALUES OF  
 R0874 TIME1 TIME2 AND PLACES THIS NEW TIME INTO THE TIME1 TIME2 COUNTER.

COUNT* SS/P05							
0875	REP 1						
0876	REP 38	LAST 1414	26,3734 4 4700 0	POSTAND CS	BIT11		RECOVER TIME AFTER STANDBY.
0877			26,3735 0 0006 1	EXTEND			
0878	REP 15	LAST 1414	26,3736 03 013 0	WAND CHAN13			CLEAR STANDBY ENABLE BIT
0879			26,3737 0 0004 0	INHINT			
0880	REP 266	LAST 1415	26,3740 3 4714 1	CA ZERO			
0881	REP 227	LAST 1415	26,3741 54 001 1	TS L			
0882	REP 32	LAST 1414	26,3742 52 025 1	DXCH TIME2			CLEAR TIME1TIME2
0883	REP 2	LAST 1414	26,3743 0 3714 0	TC SCALPREP			STORE SCALER IN MPAC, MPAC+1
0884	REP 2	LAST 1414	26,3744 0 3737 1	TC POSTAND +3			T1,T2,SCALER NOT COMPATIBLE
0885			26,3745 0 0006 1	EXTEND			T1,T2 AND SCALER OK
0886	REP 3	LAST 1414	26,3746 4 1153 0	DCS SCALSAVE			
0887	REP 695	LAST 1415	26,3747 20 155 1	DAS MPAC			FORM DP DIFFERENCE OF POSTSTANDBY SCALER

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0888	REP 48	LAST 1403	26,3750	3 4701 0	CAP	BIT10	
0889	REP 9	LAST 374	26,3751	0 7256 1	TC	SHRTIMP	
0890	REP 267	LAST 1415	26,3752	3 4714 1	CAP	ZERO	
0891	REP 696	LAST 1415	26,3753	54 156 1	TS	MPAC +2	
0892	REP 12	LAST 1398	26,3754	0 7226 0	TC	TPAGREE	
0893	REP 697	LAST 1416	26,3755	10 154 0	CCS	MPAC	
0894	REP 1		26,3756	0 3763 0	TC	POSTCOM	
0895	REP 2	LAST 1416	26,3757	0 3763 0	TC	POSTCOM	
0896			26,3760	0 3761 1	TC	+1	
0897	REP 47	LAST 1416	26,3761	3 4701 0	CAP	BIT10	
0898	REP 698	LAST 1416	26,3762	28 154 0	ADS	MPAC	
0899			26,3763	0 0008 1	POSTCOM	EXTEND	
0900	REP 5	LAST 1414	26,3764	3 1151 0	DCA	TIME2SAV	
0901	REP 699	LAST 1416	26,3765	20 155 1	DAS	MPAC	
0902	REP 13	LAST 1416	26,3766	0 7226 0	TC	TPAGREE	
0903	REP T00	LAST 1416	26,3767	52 155 1	DXCH	MPAC	
0904	REP 33	LAST 1415	26,3770	20 025 1	DAS	TIME2	
0905	REP 57	LAST 1414	26,3771	0 5447 0	TC	DOWNFLAG	
0906	REP 4	LAST 1414	26,3772	00054 0	ADRES	NODFLAG	
0905	REP 71	LAST 1411	26,3773	0 4106 1	TC	GOTOP0H	

MINUS PRESTANDBY SCALER AND SHIFT RIGHT 5 TO ALIGN BITS WITH TIME1TIME2.

NEEDED FOR TP AGREEMENT  
MAKE DP DIFF AGREE

IF DP DIFF NET +, NO SCALER OVERFLOW  
BETWEEN PRE AND POST STANDBY.  
IF DP DIFF NET -, SCALER OVERFLOWED. ADD  
BIT 10 TO HIGH DIFF TO CORRECT.

C(MPAC,+1) IS MAGNITUDE OF DELTA SCALER.  
PRESTANDBY TIME1TIME2

FORCE SIGN AGREEMENT  
UPDATED VALUE FOR T1,T2.  
LOAD UPDATED VALUE INTO T1,T2, WITH  
CLEAR NODFLAG

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L KEYRUPT, UPRUPT

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0001		14,3744	BANK	14	
0002	REF 1	07,2000	SETLOC	KEYRUPT	
0003		07,3613	BANK		
0004	REF 1		COUNT*	SS/KEYUP	
0005	REF 25	LAST 1202	07,3613	54 016 1	KEYRUPT1 TS BANKRUPT
0006	REF 328	LAST 1406	07,3614	56 002 0	XCH Q
0007	REF 20	LAST 1202	07,3615	54 012 0	TS RUPT
0008	REF 2	LAST 350	07,3616	0 4414 1	TC LODSAMPT
0009	REF 11	LAST 1415	07,3617	3 4382 1	CAP LOWS
0010			07,3620	0 0006 1	EXTEND
0011	REF 2	LAST 185	07,3621	02 015 1	RAND MNKEYIN
0012	REF 6	LAST 1379	07,3622	54 073 1	KEYCOM TS RUPTREG4
0013	REF 14	LAST 654	07,3623	4 0101 0	CS FLAGWRS
0014	REF 53	LAST 1396	07,3624	7 4674 1	MASK BIT15
0015	REF 15	LAST 1417	07,3625	26 101 0	ADS FLAGWRS
0016	REF 6	LAST 1174	07,3626	3 4371 0	ACCEPTUP CAP CHRPRIO
0017	REF 33	LAST 1387	07,3627	0 5027 1	TC NOVAC
0018	REF 66	LAST 370	0777		EBANK= DSPCOUNT
0019	REF 1		07,3630	02000 0	2CADR CHARIN
0019	REF 1		07,3631	60101 1	
0020	REF 7	LAST 1417	07,3632	3 0073 0	CA RUPTREG4
0021	REF 24	LAST 1407	07,3633	50 084 0	INDEX LOCCTR
0022	REF 701	LAST 1416	07,3634	54 154 0	TS MPAC
0023	REF 48	LAST 1069	07,3635	0 5222 0	TC RESUME

TIME IS SNATCHED IN RUPT FOR NOUN 65.

CHECK IF KEYS 5M-1M ON

(NOTE: RUPTREG4 = KEYTEMP1)

LEAVE 5 BIT KEY CDS IN MPAC FOR CHARIN

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L KEYRUPT, UPRUPT

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P0024 UPRUPT PROGRAM

0025	REP	26	LAST	1417	07,3636	54 016 1	UPRUPT	TS	BANKRUPT	
0026	REP	329	LAST	1417	07,3637	56 002 0		XCH	Q	
0027	REP	21	LAST	1417	07,3640	54 012 0		TS	CRUPT	
0028	REP	3	LAST	1417	07,3641	0 4414 1		TC	LDSAMPT	
0029	REP	266	LAST	1416	07,3642	3 4714 1		CAP	ZERO	TIME IS SNATCHED IN RUPT FOR NOUN 65.
0030	REP	2	LAST	186	07,3643	56 045 0		XCH	INLINK	
0031	REP	2	LAST	126	07,3644	54 073 1		TS	KEYTEMP1	
0032	REP	34	LAST	1363	07,3645	3 4710 0		CAP	BIT3	
0033					07,3646	0 0006 1		EXTEND		
0034	REP	34	LAST	1406	07,3647	05 011 1		WOR	DSALMOUT	TURN ON UPACT LIGHT (BIT 3 OF CHANNEL 11)
0035	REP	12	LAST	1417	07,3650	3 4362 1	UPRPT1	CAP	LOW5	TEST FOR TRIPLE CHAR REDUNDANCY
0036	REP	3	LAST	1416	07,3651	7 0073 1		MASK	KEYTEMP1	LOW5 OF WORD
0037	REP	4	LAST	1416	07,3652	56 073 0		XCH	KEYTEMP1	LOW5 INTO KEYTEMP1
0038					07,3653	0 0006 1		EXTEND		
0039	REP	46	LAST	1416	07,3654	7 4701 1		MP	BIT10	
0040	REP	1			07,3655	54 734 0		TS	KEYTEMP2	SHIFT RIGHT 5
0041	REP	13	LAST	1416	07,3656	7 4362 0		MASK	LOW5	MID 5
0042	REP	1			07,3657	6 3713 1		AD	HI10	
0043	REP	1			07,3660	0 3710 1		TC	UPTEST	
0044	REP	49	LAST	1416	07,3661	3 4701 0		CAP	BIT10	
0045					07,3662	0 0006 1		EXTEND		
0046	REP	2	LAST	1416	07,3663	7 0734 0		MP	KEYTEMP2	SHIFT RIGHT 5
0047	REP	14	LAST	1418	07,3664	7 4362 0		MASK	LOW5	HIGH 5
0048					07,3665	4 0000 0		COM		
0049	REP	2	LAST	1416	07,3666	0 3710 1		TC	UPTEST	
0050	REP	1			07,3667	4 3716 0	UPOK	CS	ELRCODE	
0051	REP	5	LAST	1416	07,3670	6 0073 0		AD	KEYTEMP1	CODE IS GOOD. IF CODE = «ERROR RESET», CLEAR UPLOCKFL(SET BIT4 OF FLAGWRD7 = 0)
0052					07,3671	0 0006 1		EXTEND		IF CODE DOES NOT = «ERROR RESET», ACCEPT CODE ONLY IF UPLOCKFL IS CLEAR (=0).
0053	REP	1			07,3672	1 3700 1		B2P	CLUPLOCK	
0054	REP	49	LAST	1411	07,3673	3 4707 0		CAP	BIT4	TEST UPLOCKFL FOR 0 OR 1.
0055	REP	19	LAST	777	07,3674	7 0103 1		MASK	FLAGWRD7	
0056	REP	390	LAST	1415	07,3675	10 000 0		CS	A	UPLOCKFL = 1
0057	REP	49	LAST	1417	07,3676	0 5222 0		TC	RESUME	UPLOCKFL = 0
0058	REP	1			07,3677	0 3626 0		TC	ACCEPTUP	
0059	REP	50	LAST	1416	07,3700	4 4707 1	CLUPLOCK	CS	BIT4	CLEAR UPLOCKFL (I.E., SET BIT4 OF FLAGWRD7 = 0)
0060	REP	20	LAST	1416	07,3701	7 0103 1		MASK	FLAGWRD7	
0061	REP	21	LAST	1416	07,3702	54 103 1		TS	FLAGWRD7	
0062	REP	2	LAST	1416	07,3703	0 3626 0		TC	ACCEPTUP	
A0063										CODE IS BAD
0064	REP	22	LAST	1418	07,3704	4 0103 1	TMPAIL2	CS	FLAGWRD7	LOCK OUT FURTHER UPLINK ACTIVITY
0065	REP	51	LAST	1416	07,3705	7 4707 1		MASK	BIT4	(BY SETTING UPLOCKFL = 1) UNTIL «ERROR RESET» IS SENT VIA UPLINK.
0066	REP	23	LAST	1416	07,3706	26 103 1		ADS	FLAGWRD7	
0067	REP	50	LAST	1416	07,3707	0 5222 0		TC	RESUME	
0068	REP	6	LAST	1418	07,3710	6 0073 0	UPTEST	AD	KEYTEMP1	

L KEYRUP, UPRUPT

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0070	REF 391 LAST 1418	07,3711	10 000 0	CCS	A
0071	REF 1	07,3712	0 3704 1	TC	TFAIL2
0072		07,3713	77740 1	OCT	77740
0073	REF 2 LAST 1419	07,3714	0 3704 1	TC	TFAIL2
0074	REF 330 LAST 1418	07,3715	0 0002 0	TC	Q

0075                   07,3716   00022 1 ELCODE OCT 22

R0076 «UPLINK ACTIVITY LIGHT» IS TURNED OFF BY ....

1. VBRELDSP
2. ERROR RESET
3. UPDATE PROGRAM(P27) ENTERED BY V70,V71,V72,AND V73.

R0080

R0081 THE RECEPTION OF A BAD CODE(I.E. CCC FAILURE) LOCKS OUT FURTHER UPLINK ACTIVITY BY SETTING BIT4 OF FLAGRD7 = 1.

R0083 THIS INDICATION WILL BE TRANSFERRED TO THE GROUND BY THE DOWNLINK WHICH DOWNLINKS ALL FLAGWORDS.

R0085 WHEN UPLINK ACTIVITY IS LOCKED OUT, IT CAN BE ALLOWED WHEN THE GROUND UPLINKS AND «ERROR RESET» CODE.

R0087 (IT IS RECOMMENDED THAT THE «ERROR LIGHT RESET» CODE IS PRECEDED BY 16 BITS THE FIRST OF WHICH IS 1 FOLLOWED

R0089 BY 15 ZEROES. THIS WILL ELIMINATE EXTRANEOUS BITS FROM INLINK WHICH MAY HAVE BEEN LEFT OVER FROM THE ORIGINAL

R0091 FAILURE)

R0092 UPLINK ACTIVITY IS ALSO ALLOWED(UNLOCKED) DURING FRESH START WHEN FRESH START SETS BIT4 OF FLAGRD7 = 0.

L DISPLAY INTERFACES ROUTINES

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R0001 DISPLAYS CAN BE CLASSIFIED INTO THE FOLLOWING CATEGORIES-

R0002 1. PRIORITY DISPLAYS- DISPLAYS WHICH TAKE PRIORITY OVER ALL OTHER DISPLAYS. USUALLY THESE DISPLAYS ARE SENT OUT UNDER CRITICAL ALARM CONDITIONS.  
R0004 2. EXTENDED VERB DISPLAYS- ALL EXTENDED VERBS AND MARK ROUTINES SHOULD USE EXTENDED VERB (MARK) DISPLAYS.  
R0005 3. NORMAL DISPLAYS- ALL MISSION PROGRAM DISPLAYS WHICH INTERFACE WITH THE ASTRONAUT DURING THE NORMAL  
R0007 SEQUENCE OF EVENTS.  
R0009 4. MISC. DISPLAYS- ALL DISPLAYS NOT HANDLED BY THE DISPLAY INTERFACE ROUTINES. THESE INCLUDE SUCH DISPLAYS AS  
R0010 MM DISPLAYS AND SPECIAL PURPOSE DISPLAYS HANDLED BY PINBALL.  
R0012 5. ASTRONAUT INITIATED DISPLAYS- ALL DISPLAYS INITIATED EXTERNALLY.  
R0013  
R0014 THE FOLLOWING TERMS ARE USED TO DESCRIBE THE STATUS OF DISPLAYS-

R0015 1. ACTIVE- THE DISPLAY WHICH IS (1) BEING DISPLAYED TO THE ASTRONAUT AND WAITING FOR A RESPONSE OR  
R0017 (2) WAITING FIRST IN LINE FOR THE ASTRONAUT TO FINISH USING THE DSKY OR (3) BEING DISPLAYED ON THE DSKY  
R0019 BUT NOT WAITING FOR A RESPONSE.  
R0020 2. INACTIVE -A DISPLAY WHICH HAS (1) BEEN ACTIVE BUT WAS INTERRUPTED BY A DISPLAY OF HIGHER PRIORITY,  
R0022 (2) BEEN PUT INTO THE WAITING LIST AT TIME IT WAS REQUESTED DUE TO THE FACT A HIGHER PRIORITY DISPLAY  
R0024 WAS ALREADY GOING, (3) BEEN INTERRUPTED BY THE ASTRONAUT (CALLED A PINBRANCH CONDITION, SINCE THIS TYPE  
R0026 OF INACTIVE DISPLAY IS USUALLY REACTIVATED ONLY BY PINBALL) OR (4) A DISPLAY WHICH HAS FINISHED BUT STILL  
R0028 HAS INFO SAVED FOR RESTART PURPOSES.  
R0029 DISPLAY PRIORITIES WORK AS FOLLOWS-

R0030 INTERRUPTS-

R0031 1. THE ASTRONAUT CAN INTERRUPT ANY DISPLAY WITH AN EXTERNAL DISPLAY REQUEST.  
R0033 2. INTERNAL DISPLAYS CAN NOT BE SENT OUT WHEN THE ASTRONAUT IS USING THE DSKY.  
R0035 3. PRIORITY DISPLAYS INTERRUPT ALL OTHER TYPES OF INTERNAL DISPLAYS. A PRIORITY DISPLAY INTERRUPTING ANOTHER  
R0037 PRIORITY DISPLAY WILL CAUSE AN ABORT UNLESS BIT14 IS SET FOR THE LINUS ROUTINE.  
R0039 4. A MARK DISPLAY INTERRUPTS ANY NORMAL DISPLAY.  
R0040 5. A MARK THAT INTERRUPTS A MARK COMPLETELY REPLACES IT.

R0041 ORDER OF WAITING DISPLAYS-

R0042 1. ASTRONAUT EXTERNAL USE  
R0043 2. PRIORITY  
R0044 3. INTERRUPTED MARK  
R0045 4. INTERRUPTED NORMAL  
  
R0046 5. MARK TO BE REQUESTED (SEE DESCRIPTION OF ENDMARK)  
R0047 6. MARK WAITING  
R0048 7. NORMAL WAITING

## L DISPLAY INTERFACE ROUTINES

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R0049 THE DISPLAY ROUTINES ARE INTENDED TO SERVE AS AN INTERFACE BETWEEN THE USER AND PINBALL. THE  
 R0051 FOLLOWING STATEMENTS CAN BE MADE ABOUT NORMAL DISPLAYS AND PRIORITY DISPLAYS (A DESCRIPTION OF MARK ROUTINES  
 R0053 WILL FOLLOW LATER).

- R0054 1. ALL ROUTINES THAT END IN R HAVE AN IMMEDIATE RETURN TO THE USER. FOR ALL FLASHING DISPLAYS THIS RETURN
- R0056 IS TO THE USERS CALL CADR +4. FOR THE ONLY NON FLASHING IMMEDIATE RETURN DISPLAY (GODSPR) THIS RETURN
- R0058 IS TO THE USERS CALLING LOC +1.
- R0059 2. ALL ROUTINES NOT ENDING IN R DO NOT DO AN IMMEDIATE RETURN TO THE USER.
- R0061 3. ALL ROUTINES THAT END IN R START A SEPARATE JOB (MAKEPLAY) WITH USERS JOB PRIORITY.
- R0063 4. ALL ROUTINES NOT ENDING IN R BRANCH DIRECTLY TO MAKEPLAY WHICH MAKES THESE DISPLAYS A PART OF THE
- R0065 USERS JOB.
- R0066 5. ALL DISPLAY ROUTINES ARE CALLED VIA BANKCALL.
- R0067 6. TO RESTART A DISPLAY THE USER WILL GENERALLY USE A PHASE OF ONE WITH DESIRED RESTART GROUP (SEE
- R0069 DESCRIPTION OF RESTARTS).
- R0070 7. ALL FLASHING DISPLAYS HAVE 3 RETURNS TO THE USER FROM ASTRONAUT RESPONSES. A TERMINATE (V34) BRANCHES
- R0072 TO THE USERS CALL CADR +1. A PROCEED (V33) BRANCHES TO THE USERS CALL CADR +2. AN ENTER OR RECYCLE
- R0074 (V32) BRANCHES TO THE USERS CALL CADR +3.
- R0075 8. ALL ROUTINES MUST BE USED UNDER EXECUTIVE CONTROL.

R0076 A DESCRIPTION OF EACH ROUTINE WITH AN EXAMPLE FOLLOWS:

R0077 GODSP IS USED TO DISPLAY A VERB NOUN ARRIVING IN A. NO RETURN IS MADE TO THE USER.

- R0079 1. GODSP IS NOT RESTARTABLE
- R0080 2. A VERB PASTE WITH GODSP ALWAYS TURNS ON THE FLASH.

A0081	CAF	VXXNYY
A0082	TC	BANKCALL
A0083	CADR	GODSP

A0084 VXXNYY OCT OXXYY

R0085 GODSPR IS THE SAME AS GODSP ONLY RETURN IS TO THE USER.

A0086	CAF	VXXNYY
A0087	TC	BANKCALL
A0088	CADR	GODSP

A0089 ... ... IMMEDIATE RETURN OF GODSPR

R0090 GOFASH DISPLAYS A FLASHING VERB NOUN WITH NO IMMEDIATE RETURN TO THE USER. 3 RETURNS ARE POSSIBLE FROM  
 R0092 THE ASTRONAUT (SEE NO. 7 ABOVE).

A0093	CAF	VXXNYY	VXX NYY WILL BE A FLASHING VERB NOUN.
A0094	TC	BANKCALL	
A0095	CADR	GOFASH	
A0096	...	...	TERMINATE RETURN
A0097	...	...	PROCEED RETURN
A0098	...	...	ENTER OR RECYCLE RETURN

R0099 GOPERF1 IS ENTERED WITH DESIRED CHECKLIST VALUE IN A. GOPERF1 WILL DISPLAY THIS VALUE IN R1 BY MEANS OF A

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L DISPLAY INTERFACE ROUTINES

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R0101 V01 N25.A FLASHING PLEASE PERFORM ON CHECKLIST ( V50 N25 ) IS THEN DISPLAYED. NO IMMEDIATE RETURN IS MADE TO  
R0103 USER (SEE NO. 7 ABOVE).

R0104 GOPERF1 BLANKS REGISTERS R2 AND R3

A0105	CAP	OCTDX	CODE FOR CHECKLIST VALUE XX
A0106	TC	BANKCALL	
A0107	CADR	GOPERF1	
A0108	...	...	TERMINATE RETURN
A0109	...	...	PROCEED RETURN
A0110	...	...	ENTER RETURN

R0111 GOPERF2 IS ENTERED WITH A VARIABLE NOUN AND V01 ( V00 FOR N10 OR N11 ) IN A. GOPERF2 WILL FIRST DISPLAY THE  
R0113 REQUESTED NOUN BY MEANS OF A V01NYY OR A V00NYY. PLEASE PERFORM ON NOUN (V50 NYY) THEN BECOMES A FLASHING  
R0115 DISPLAY. NO IMMEDIATE RETURN IS MADE TO THE USER (SEE NO. 7 ABOVE).

R0116 GOPERF2 DOES NOT BLANK ANY REGISTERS

A0117	CAP	VX0NYY	VARIABLE NOUN YY. XX=00 OR 01.
A0118	TC	BANKCALL	
A0119	CADR	GOPERF2	
A0120	...	...	TERMINATE RETURN
A0121	...	...	PROCEED RETURN
A0122	...	...	ENTER RETURN

R0123 GOPERF3 IS USED FOR A PLEASE PERFORM ON A PROGRAM NUMBER. THE DESIRED PROGRAM NO. IS ENTERED IN A. GOPERF3  
R0125 DISPLAYS THE NO. BY MEANS OF A V06 N07 FOLLOWED BY A FLASHING V50 N07 FOR A PLEASE PERFORM. NO IMMEDIATE RETURN  
R0127 IS MADE TO THE USER (SEE NO. 7 ABOVE).

R0128 GOPERF3 BLANKS REGISTERS R2 AND R3

A0129	CAP	DEC0X	REQUEST PERFORM ON P0X
A0130	TC	BANKCALL	
A0131	CADR	GOPERF3	
A0132	...	...	TERMINATE RETURN
A0133	...	...	PROCEED RETURN
A0134	...	...	ENTER RETURN

R0135 GOPERF4 IS USED FOR A PLEASE PERFORM ON AN OPTION. THE DESIRED OPTION IS ENTERED IN A AND STORED IN OPTION1.  
R0137 GOPERF4 DISPLAYS R1 AND R2 BY MEANS OF A V04N06 FOLLOWED BY A FLASHING V50N06 FOR A PLEASE PERFORM. NO  
R0139 IMMEDIATE RETURN IS MADE TO THE USER (SEE NO. 7 ABOVE).

A0140	CAP	OCTXX	REQUEST PERFORM ON OPTION XX
A0141	TC	BANKCALL	
A0142	CADR	GOPERF4	
A0143	...	...	TERMINATE RETURN
A0144	...	...	PROCEED RETURN
A0145	...	...	ENTER RETURN

R0146 GOPERF4 BLANKS REGISTER R3

## L DISPLAY INTERFACE ROUTINES

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R0147 GODSPRET IS USED TO DISPLAY A VERB NOUN ARRIVING IN A WITH A RETURN TO THE USER AFTER THE DISPLAY HAS BEEN SENT OUT.

A0150 CAP VXXNYY  
 A0151 TC BANKCALL  
 A0152 CADR GODSPRET

A0153 ... ...

RETURN TO USER

B0154 REGODSP IS USED TO DISPLAY A VERB NOUN ARRIVING IN A. REGODSP IS THE SAME AS GODSP ONLY REGODSP REPLACES ANY ACTIVE NORMAL DISPLAY IF ONE WAS ACTIVE.

B0156 A0157 CAP VXXNYY  
 A0158 TC BANKCALL  
 A0159 CADR REGODSP

B0160 REFLASH IS THE SAME AS GOFLASH ONLY REFLASH REPLACES ANY ACTIVE NORMAL DISPLAY IF ONE WAS ACTIVE.

A0162 CAP VXXNYY VXX NYY WILL BE A FLASHING VERB NOUN  
 A0163 TC BANKCALL  
 A0164 CADR REFLASH  
 A0165 ... ... - - - TERMINATE RETURN  
 A0166 ... ... - - - PROCEED RETURN  
 A0167 ... ... - - - ENTER RETURN

A0168 GOFLASHR IS SAME AS GOFLASH ONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +4.

A0170 CAP VXXNYY  
 A0171 TC BANKCALL  
 A0172 CADR GOFLASHR  
 A0173 ... ... TERMINATE RETURN  
 A0174 ... ... PROCEED RETURN  
 A0175 ... ... ENTER OR RECYCLE RETURN  
 A0176 ... ... IMMEDIATE RETURN FROM GOFLASHR

R0177 GOPERF1R IS THE SAME AS GOPERF1 ONLY GOPERF1R HAS AN IMMEDIATE RETURN TO USERS CALL CADR +4.

R0179 GOPERF1R BLANKS REGISTERS R2 AND R3

A0180 CAP OCTDOX CODE FOR CHECKLIST VALUE XX.  
 A0181 TC BANKCALL  
 A0182 CADR GOPERF1R  
 A0183 ... ... TERMINATE RETURN  
 A0184 ... ... PROCEED RETURN  
 A0185 ... ... ENTER RETURN  
 A0186 ... ... IMMEDIATE RETURN FROM GOPERF1R

R0187 GOPERF2R IS THE SAME AS GOPERF2 ONLY AN IMMEDIATE RETURN IS MADE TO USERS CALL CADR +4.

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R0189 GOPERF2R DOES NOT BLANK ANY REGISTERS

A0190	CAP	VXXNYY	VARIABLE NOUN YY REQUESTED. XX=00 OR 01
A0191	TC	BANKCALL	
A0192	CADR	GOPERF2R	
A0193	...	...	TERMINATE RETURN
A0194	...	...	PROCEED RETURN
A0195	...	...	ENTER RETURN
A0196	...	...	IMMEDIATE RETURN HERE FROM GOPERF2R

R0197 GOPERF2R IS THE SAME AS GOPERF3 ONLY AN IMMEDIATE RETURN IS MADE TO USERS CALL CADR +4.

R0199 GOPERF3R BLANKS REGISTERS R2 AND R3

A0200	CAP	PROGX	PERFORM PROGRAM XX
A0201	TC	BANKCALL	
A0202	CADR	GOPERF3R	
A0203	...	...	TERMINATE RETURN
A0204	...	...	PROCEED RETURN
A0205	...	...	ENTER RETURN
A0206	...	...	GOPERF3R IMMEDIATELY RETURNS HERE

R0207 GOPERF4R IS THE SAME AS GOPERF4 ONLY AN IMMEDIATE RETURN IS MADE TO USERS CALL CADR +4.

A0209	CAP	OCDOX	REQUEST PERFORM ON OPTIONXX
A0210	TC	BANKCALL	
A0211	CADR	GOPERF4R	
A0212	...	...	TERMINATE RETURN
A0213	...	...	PROCEED RETURN
A0214	...	...	ENTER RETURN
A0215	...	...	IMMEDIATE RETURN TO USER

R0216 GOPERF4R BLANKS REGISTER R3

R0217 REFLASHR IS THE SAME AS REFLASH ONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +4.

A0219	CAP	VXXNYY	VXX NYY WILL BE A FLASHING VERB NOUN
A0220	TC	BANKCALL	
A0221	CADR	REFLASHR	
A0222	...	...	TERMINATE RETURN
A0223	...	...	PROCEED RETURN
A0224	...	...	ENTER RETURN
A0225	...	...	IMMEDIATE RETURN TO USER

R0226 REGOODSPR IS THE SAME AS REGOODSP ONLY A RETURN (IMMEDIATE) IS MADE TO THE USER.

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A0228  
A0229  
A0230

CAP VDNYY  
TC BANKCALL  
CADR REGDSPR

A0231

... ...

IMMEDIATE RETURN TO USER

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L DISPLAY INTERFACE ROUTINES

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R0232 GOMARK IS USED TO DISPLAY A MARK VERB NOUN ARRIVING IN A. NO RETURN IS MADE TO THE USER.

R0234 GOXDSP = GOMARK

A0235 CAP VSONYY  
A0236 TC BANKCALL  
A0237 CADR GOMARK VSONYY CONTAINS VERB AND NOUN  
OTHER EXTENDED VERBS USE CADR GOXDSP

R0238 GOMARKR IS THE SAME AS GOMARK ONLY RETURN IS TO THE USER.

R0239 GOXDSPR = GOMARKR

A0240 CAP VSONYY  
A0241 TC BANKCALL  
A0242 CADR GOMARKR OTHER EXTENDED VERBS USE CADR GOXDSPR  
A0243 ... ... IMMEDIATE RETURN OF GOMARKR

R0244 GOMARKP DISPLAYS A FLASHING MARK VERB NOUN WITH NO IMMEDIATE RETURN TO THE USER. 3 RETURNS ARE POSSIBLE FROM  
R0246 THE ASTRONAUT (SEE NO. 7 ABOVE).

R0247 GOXDSPP = GOMARKP

A0248 CAP VSONYY  
A0249 TC BANKCALL  
A0250 CADR GOMARKP VSONYY WILL BE A FLASHING MARK VERB NOUN  
A0251 ... ... OTHER EXTENDED VERBS USE CADR GOXDSPP  
A0252 ... ... TERMINATE RETURN  
A0253 ... ... PROCEED RETURN  
ENTER OR RECYCLE RETURN

R0254 GOMARKPR IS THE SAME AS GOMARKP ONLY AN IMMEDIATE RETURN IS MADE TO THE USER CALL CADR +4.

R0256 GOXDSPPR = GOMARKPR

A0257 CAP VSONYY FLASHING MARK VERB NOUN  
A0258 TC BANKCALL  
A0259 CADR GOMARKPR OTHER EXTENDED VERBS USE CADR GOXDSPPR  
A0260 ... ... TERMINATE RETURN  
A0261 ... ... PROCEED RETURN  
A0262 ... ... ENTER OR RECYCLE RETURN  
A0263 ... ... IMMEDIATE RETURN TO THE USPR

R0264 GOMARK1 IS USED FOR A PLEASE PERFORM ON A MARK REQUEST WITH ONLY 1 ASTRONAUT RETURN TO THE USER. NO IMMEDIATE  
R0266 RETURN IS MADE. THE DESIRED MARK PLEASE PERFORM VERB AND DESIRED NOUN IS ENTERED IN A. GOMARK1 DISPLAYS R1, R2, R  
R0268 MEANS OF A V5XNY FOLLOWED BY A FLASHING V5XNYY FOR A PLEASE PERFORM. THE ASTRONAUT WILL RESPOND WITH A MARK  
R0270 OR MARK REJECT OR AN ENTER. THE ENTER IS THE ONLY ASTRONAUT RESPONSE THAT WILL COME BACK TO THE USER.

A0272 CAP V5XNYY X=1,2,3,4 Y= NOUN  
A0273 TC BANKCALL

## L DISPLAY INTERFACE ROUTINES

A0274 CADR GOMARK1  
... ENTER RETURN

A0275 ...

R0276 \*\*\* IF BLANKING DESIRED ON NON R ROUTINES, NOTIFY DISPLAYER.

R0277 GOMARK1R IS THE SAME AS A GOMARK1 ONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +2.  
CAP VSXNYY X=1,2,3,4 YY=NOUN  
TC BANKCALL  
CADR GOMARK1R

A0280 ...

A0281 ...

A0282 ... ASTRONAUT ENTER RETURN  
A0283 ... IMMEDIATE RETURN TO USER

R0284 GOMARK2 IS THE SAME AS GOMARK1 ONLY 3 RETURNS ARE MADE TO THE USER FROM THE ASTRONAUT.  
CAP VSXNYY X=1,2,3,4 YY=NOUN  
TC BANKCALL  
CADR GOMARK2

A0286 ...

A0287 ...

A0288 ... TERMINATE RETURN

A0289 ... PROCEED RETURN

A0290 ... ENTER RETURN

A0291 ...

R0292 GOMARK2R IS THE SAME AS GOMARK1R ONLY 3 ASTRONAUT RETURNS ARE MADE TO THIS USER.

A0294 CAP VSXNYY X=0,1,2,3,4 YY=NOUN  
TC BANKCALL  
CADR GOMARK2R

A0295 ... TERMINATE RETURN

A0296 ... PROCEED RETURN

A0297 ... ENTER RETURN

A0298 ...

A0299 ...

A0300 ... IMMEDIATE RETURN TO THE USER

R0301 GOMARK3 IS USED FOR A PLEASE PERFORM ON A MARK REQUEST WITH A 3 COMP. DEC DISPLAY. THE DESIRED MARK PLEASE  
R0302 PERFORM VERB AND NOUN ARE ENTERED IN A. GOMARK3 DISPLAYS R1, R2, R3 BY MEANS OF A V06NYY FOLLOWED BY A FLASHING  
R0303 VSXNYY FOR A PLEASE PERFORM. GOMARK3 HAS 3 ASTRONAUT RETURNS TO THE USER WITH NO IMMEDIATE RETURN.

A0307 CAP VSXNYY X=1, 2, 3, 4 YY=NOUN  
TC BANKCALL  
CADR GOMARK3

A0308 ... TERMINATE RETURN

A0309 ... PROCEED RETURN

A0310 ... ENTER RETURN

A0311 ...

A0312 ...

R0313 GOMARK4 IS THE SAME AS GOMARK3 ONLY R2 AND R3 ARE BLANKED AND R1 IS DISPLAYED IN OCTAL.

A0315 CAP VSXNYY X=1,2,3,4 YY=NOUN  
TC BANKCALL  
CADR GOMARK4

A0316 ... TERMINATE RETURN

A0317 ... PROCEED RETURN

A0318 ...

A0319 ...

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L DISPLAY INTERFACE ROUTINES      USER=S PAGE NO. 9 EO 54

A0320      ...      ENTER RETURN

R0321 EXDSPRET IS USED TO DISPLAY A VERB NOUN ARRIVING IN A WITH A RETURN MADE TO THE USER AFTER THE DISPLAY HAS BEEN  
R0323 SENT OUT.

A0324      CAP VXXNYY  
A0325      TC BANKCALL  
A0326      CADR EXDSPRET

A0327      ...      RETURN TO USER

R0328 KLEENEX CLEANS OUT ALL MARK DISPLAYS (ACTIVE AND INACTIVE). A RETURN IS MADE TO THE USER AFTER THE MARK DISPLAYS  
R0330 HAVE BEEN CLEANED OUT.

A0331      TC BANKCALL  
A0332      CADR KLEENEX

A0333      ...      RETURN TO USER

R0334 MARKBRAN IS A SPECIAL PURPOSE ROUTINE USED FOR SAVING JOB VAC AREAS (SEE DESCRIPTION OF MARKBRAN BELOW).

A0336      TC BANKCALL  
A0337      CADR MARKBRAN

A0338      ...      BAD RETURN IF MARK DISPLAY NOT ACTIVE  
A0339      (GOOD RETURN TO IMMEDIATE RETURN LOC OF  
A0340 LAST FLASHING MARK R ROUTINE)

R0341 PINBRNH RESTABLISHES THE LAST ACTIVE FLASHING DISPLAY. IF THERE IS NO ACTIVE FLASHING DISPLAY, THE DSKY IS  
R0343 BLANKED AND CONTROL IS SENT TO ENDOPJOB.

A0344      TC POSTJUMP  
A0345      CADR PINBRNH

R0346 PRIODSP IS USED AS A PRIORITY DISPLAY. IT WILL DISPLAY A COPLASH TYPE DISPLAY WITH THREE POSSIBLE RETURNS FROM  
R0348 THE ASTRONAUT(SEE NO.7 ABOVE).

R0349 THE MAIN PURPOSE OF PRIODSP IS TO REPLACE THE PRESENT DISPLAY WITH A DISPLAY OF HIGHER PRIORITY AND TO  
R0351 PROVIDE A MEANS FOR RESTORING THE OLD DISPLAY WHEN THE PRIORITY DISPLAY  
R0352 IS RESPONDED TO BY THE ASTRONAUT.

R0353 THE FORMER DISPLAY IS RESTORED BY AN AUTOMATIC BRANCH TO WAKE UP THE DISPLAY THAT WAS INTERRUPTED BY THE  
R0355 PRIO DISPLAY.

A0356      CAP VXXNYY      VXXNYY WILL BE A FLASHING VERB NOUN  
A0357      TC BANKCALL  
A0358      CADR PRIODSP  
A0359      ...      TERMINATE RETURN  
A0360      ...      PROCEED RETURN

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L DISPLAY INTERFACE ROUTINES

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A0361

ENTER OR RECYCLE RETURN

R0362 PRIODSPR IS THE SAME AS PRIODSPONLY AN IMMEDIATE RETURN IS MADE TO THE USERS CALL CADR +4.

A0364

CAP VDOINYY

VDOINYY WILL BE A FLASHING VERB NOUN

A0365

TC BANKCALL

TERMINATE RETURN

A0366

CADR PRIODSPR

PROCEED RETURN

A0367

...

ENTER OR RECYCLE RETURN

A0368

...

IMMEDIATE RETURN

A0369

...

A0370

...

IMMEDIATE RETURN

R0371 PRIOLARM DOES A V05N09 PRIODSPR.

R0372 CLEANDSP CLEANS OUT ALL NORMAL DISPLAYS (ACTIVE AND INACTIVE). A RETURN IS MADE TO THE USER AFTER NORMAL  
R0374 DISPLAYS ARE CLEANED OUT.

A0375

TC BANKCALL

A0376

CADR CLEANDSP

A0377

...

RETURN TO USER

## L DISPLAY INTERFACE ROUTINES

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R0378 GENERAL INFORMATION

R0379 -----

R0380 ALARM OR ABORT EXIT MODES--

A0381 PRIOBORT TC ABORT  
A0382 OCT 1502R0383 PRIOBORT IS BRANCHED TO WHEN (1) A NORMAL DISPLAY IS REQUESTED AND ANOTHER NORMAL DISPLAY IS ALREADY ACTIVE (REFLASH AND REGODSP ARE EXCEPTIONS) OR (2) A PRIORITY DISPLAY IS REQUESTED WHEN ANOTHER PRIORITY DISPLAY IS ALREADY ACTIVE (A PRIORITY WITH LINUS BIT14 IS AN EXCEPTION).  
R0388 ERASABLE INITIALIZATION REQUIRED--R0389 ACCOMPLISHED BY FRESH START- 1. FLAGRD4 (USED EXCLUSIVELY BY DISPLAY INTERFACE ROUTINES)  
R0391 2. NVSAVE = NORMAL VERB AND NOUN REGISTER.  
R0393 3. EBANKITEM = NORMAL INACTIVE FLAGWORD(ALSO CONTAINS NORMALS EBANK).  
R0395 4. R1SAVE = MARKPRAN CONTROL WORD  
R0396 5. RESTREG = PRIORITY 30 AND SUPERBANK 3.  
R0398 OUTPUT--R0399 NVWORD = PRIO VERB AND NOUN  
R0400 NVWORD +1(MARKNV) = MARK VERB AND NOUN  
R0401 NVWORD +2(NVSAVE) = NORMAL VERB AND NOUNR0402 DSPFLG(ERANKSAV) = PRIO FLAGWORD (INCLUDING EBANK)  
R0403 DSPFLG +1(MARKEBAN) = MARK FLAGWORD (INCLUDING EBANK)  
R0404 DSPFLG +2(EBANKITEM) = NORMAL FLAGWORD (INCLUDING EBANK)R0405 CADRFLSH = PRIO USERS CALL CADR +1 LOCATION  
R0406 CADRFLSH +1(MARKFLSH) = MARK USERS CALL CADR +1 LOCATION  
R0407 CADRFLSH +2(TMPFLSH) = NORMAL USERS CALL CADR +1 LOCATIONR0408 PRIOTIME = TIME EACH PRIO REQUEST FIRST SENT OUT  
R0409 OPTION1 = DESIRED OPTION FROM GOPERF4  
R0410 FLAGRD4 = BIT INFO FOR CONTROL OF ALL DISPLAY ROUTINES  
R0411 DSPIEM1 = R1 INFO FOR ASTRONAUT FROM PERFORM DISPLAYS(NORMAL)  
R0412 SUBROUTINES USED-- NVSUB, FLAGUP, FLAGDOWN, ENDORJOS, BLANKSUB, ABORT, JOPWAKE, JOBSLEEP, FINDVAC, PRIOCHNG,  
R0414 JAMTERM, NVSUBBUSY, FLASHON, ENDIDLE, CHANG1, BANKJUMP, MAKECADR, NOVAC,  
R0415 DEBRIS-- (STORED INTO)R0416 TEMPORARY TEMPORARIES- A, Q, L, MPAC +2, MPAC +3, MPAC +4, MPAC +5, MPAC +6, RUPTREG2, RUPTREG3, CYL,  
R0418 EBANK, RUPTREG4, LOC, BANKSET, MODE, MPAC, MPAC +1  
R0420 ERASABLES(SHARED AND USED WITH OTHER PROGRAMS) CADRSTOR, DSPLIST, LOC, DSPIEM1, OPTION1

R0422 ERASABLES(USED ONLY BY DISPLAY ROUTINES)- NVWORD,+1,+2, DSPFLG,+1,+2, CADRFLSH,+1,+2, PRIOTIME, FLAGRD4,

## L DISPLAY INTERFACE ROUTINES

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R0424 R1SAVE, MARC2PAC,  
R0425 DEBRIS-- (USED BUT NOT STORED INTO) - NOUNREG, VERBREG, LOCCTR, MONSAVE1  
R0426 FLAGWORD DESCRIPTIONS--  
R0427 FLAGWRD4- SEE DESCRIPTION UNDER LOG SECTION ERASABLE ASSIGNMENTS

R0428 DSPPLG, DSPPLG+1, DSPPLG +2-

R0429  
R0430 BITS 1 BLANK R1  
R0431 2 BLANK R2  
R0432 3 BLANK R3  
R0433 4 FLASHING DISPLAY REQUESTED  
R0434 5 PERFORM DISPLAY REQUESTED  
R0435 6 ----- EXOSPRET GODSPRET  
R0436 7 PRIO DISPLAY -----  
R0437 8 ----- DSC MARK PERFORM -----  
R0438 9 EBANK  
R0439 10 EBANK  
R0440 11 EBANK  
R0441 12 ----- V99PASTE  
R0442 13 2ND PART OF PERFORM  
R0443 15 REFLASH OR REDO REFLASH OR REDO  
R0444 15 ----- MARK REQUEST -----  
R0445 RESTARTING DISPLAYS--

## R0446 RULES FOR THE DSKY OPERATOR--

1. PROCEED AND TERMINATE SERVE AS RESPONSES TO REQUESTS FOR OPERATOR RESPONSE (FLASHING V/N). AS LONG AS THERE IS ANY REQUEST AWAITING OPERATOR RESPONSE, ANY USE OF PROCEED OR TERMINATE WILL SERVE AS RESPONSES TO THAT REQUEST. CARE SHOULD BE EXERCISED IN ATTEMPTING TO KILL AN OPERATOR INITIATED MONITOR WITH PROCEED AND TERMINATE FOR THIS REASON.
2. THE ASTRONAUT MUST RESPOND TO A PRIORITY DISPLAY NO SOONER THAN 5 SECs FROM THE TIME THE MISSION PROGRAM SENT OUT THE REQUEST FOR OPERATOR RESPONSE (THE ASTRONAUT WOULD SEE THIS DISPLAY FOR LESS TIME DUE TO TIME IT TAKES TO GET DISPLAY SENT OUT.) IF THE ASTRONAUT RESPONDS TOO SOON, THE PRIORITY DISPLAY IS SENT OUT AGAIN--AND AGAIN UNTIL AN ACCUMULATED 5 SECs FROM TIME THE FIRST PRIORITY DISPLAY WAS SENT OUT. THE SAME 5 SEC. DELAY WILL OCCUR AT 163.84 SECs OR IN ANY MULTIPLE OF THAT TIME DUE TO PROGRAM CONSIDERATION.
3. KEY RELEASE BUTTON-A)  
A) IF THE KEY RELEASE LIGHT IS ON, IT SIMPLY RELEASES THE KEYBOARD AND DISPLAY FOR INTERNAL USE.  
B) IF THE KEY RELEASE LIGHT IS OFF, AND IF SOME REQUEST FOR OPERATOR RESPONSE (FLASHING V/N) IS STILL AWAITING RESPONSE THEN IT RE-ESTABLISHES THE DISPLAYS THAT ORIGINALLY REQUESTED RESPONSE.  
IF AN OPERATOR WANTS THEREFORE TO RE-ESTABLISH BUT CONDITION (A) IS ENCOUNTERED, A SECOND DEPRESSION OF KEY RELEASE BUTTON MAY BE NECESSARY.
4. IT IS IMPORTANT TO ANSWER ALL REQUESTS FOR OPERATOR RESPONSE.
5. IT IS ALWAYS GOOD PRACTICE TO TERMINATE AN EXTENDED VERB BEFORE ASKING FOR ANOTHER ONE OR THE SAME ONE OVER AGAIN.

R0479 SPECIAL CONSIDERATIONS--

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## L DISPLAY INTERFACE ROUTINES

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R0480      1. MPAC +2 SAVED ONLY IN MARK DISPLAYS  
R0481      2. GODSP(R), REGODSP(R), GOMARK(R) ALWAYS TURN ON THE FLASH IF ENTERED WITH A PASTE VERB REQUEST.  
R0483      3. ALL NORMAL DISPLAYS ARE RESTARTABLE EXCEPT GODSP(R), REGODSP(R)  
R0484      4. ALL EXTENDED VERBS WITH DISPLAYS SHOULD START WITH A TC TESTACT AND FINISH WITH A TC ENDEXT.  
R0485      5. GODSP(R) AND REGODSP(R) MUST BE IN THE SAME EBANK AND SUPERBANK AS THE LAST NORMAL DISPLAY RESTARTED  
R0488      BY A .1 RESTART PHASE CHANGE.  
R0489      6. IN ORDER TO SET UP A NON DISPLAY .1 RESTART POINT, THE USER MUST MAKE CERTAIN THAT RESTREG CONTAINS THE  
R0491      CORRECT PRIORITY AND SUPERBANK AND THAT EBANKITEM CONTAINS THE CO  
R0491      7. IF CLEANDSP IS RESTARTED VIA A .1 PHASE CHANGE, CAP ZERO SHOULD BE EXECUTED BEFORE THE TC BANKCALL.

## L DISPLAY INTERFACE ROUTINES

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## P0492 CALLING SEQUENCE FOR BLANKING

CAP	BITX	X=1,2,3 BLANK R1,R2,R3 RESPECTIVELY
TC	BLANKET	
...	...	RETURN TO USER HERE

R0496 IN ORDER TO USE BLANKET CORRECTLY THE USER MUST USE A DISPLAY ROUTINE THAT ENDS IN R FIRST FOLLOWED BY THE CALL  
 R0498 TO BLANKET AT THE IMMEDIATE RETURN LOC.

0499		5415	BLOCK 02	
0500	REF 1	4000	SETLOC PPTAG4	
0501		5415	BANK	
0502	REF 1		COUNT 02/DSPA	
0503	REF 702	LAST 1417	5415 54 162 0 BLANKET TS MPAC +6	
0504	REF 1		5416 4 0160 1 CS PLAYTEM4	
0505	REF 703	LAST 1433	5417 7 0162 0 MASK MPAC +6	
0506	REF 704	LAST 1433	5420 50 161 1 INDEX MPAC +5	
0507	REF 2	LAST 1433	5421 28 160 1 ADS PLAYTEM4	
0508	REF 331	LAST 1419	5422 0 0002 0 TC Q	
0511	REF 63	LAST 1410	5423 0 4574 0 ENDMARK TC POSTJUMP	
0512	REF 1		5424 20457 0 CADR MARKEND	
05121	REF 289	LAST 1418	5425 3 4714 1 CLEARMRK CAP ZERO	
05122	REF 20	LAST 888	5426 55<044 1 TS EXTRBACT	
05123			5427 0 0004 0 INHINT	
05124	REF 81	LAST 1406	5430 4 4712 0 CS BIT1	
05125	REF 5	LAST 385	5431 7 0100 1 MASK FLAGWRD4	
05126	REF 6	LAST 1433	5432 54 100 1 TS FLAGWRD4	
05127			5433 0 0003 1 RELINT	
05128	REF 332	LAST 1433	5434 0 0002 0 TC Q	
R0513	***ALL EXTENDED VERB ROUTINES THAT HAVE AT LEAST ONE FLASHING DISPLAY MUST TCP ENDMARK OR TCP ENDEXT WHEN FINISHED.			
0516		10,2457	BANK 10	
0517	REF 1	10,2000	SETLOC DISPLAYS	
0518		10,2457	BANK	
0519	REF 1		COUNT 10/DSPA	
R0520	INTERONLY IS USED TO DIFFERENTIATE THE MARK ROUTINE WITH ONLY ONE RETURN TO THE USER FROM THE MARKING ROUTINE WHICH RETURNS TO THE USER. THIS ROUTINE IS ONLY USED BY GOMARK1 AND GOMARK1R.			
R0522				
05291	REF 8	LAST 744	10,2457 0 5425 1 MARKEND TC CLEARMRK	
05297	REF 1		10,2460 1 3547 0 TCP MARKOVER	

L	DISPLAY INTERFACE ROUTINES							USER#S PAGE NO. 15	E0 S4
0530	REP	1	10,2461	54 155 1	GOMARK	TS	PLAYTEM1	ENTRANCE FOR MARK GODSP	
0531	REP	54	LAST 1417	10,2462	3 4674 0	GOMARS	CAP	BIT15	BIT15 SET FOR ALL MARK REQUESTS
0532	REP	1		10,2463	1 2628 0		TOP	GOPFLASH2	
0533	REP	270	LAST 1433	10,2464	3 4714 1	KLEENEX	CAP	ZERO	CLEAN OUT EXTENDED VERBS
0534	REP	2	LAST 1434	10,2465	54 155 1	GOMARKP	TS	PLAYTEM1	ENTRANCE FOR MARK GOPFLASH
0535	REP	1		10,2466	3 3157 1		CAP	MARCPMSK	
0536	REP	2	LAST 1434	10,2467	1 2626 0		TOP	GOPFLASH2	MARK,FLASH
0539	REP	3	LAST 1434	10,2470	54 155 1	GOMARK2	TS	PLAYTEM1	
0540	REP	1		10,2471	3 3846 0	MARKPORM	CAP	MPERPMSK	MARK, PERFORM, FLASH
0541	REP	3	LAST 1434	10,2472	1 2626 0		TOP	GOPFLASH2	
0542	REP	4	LAST 1434	10,2473	54 155 1	GOMARK3	TS	PLAYTEM1	USED FOR 3COMP DECIMAL PERFORM
0543	REP	1		10,2474	3 3833 1		CAP	MARCK3MSK	
0544	REP	4	LAST 1434	10,2475	1 2626 0		TOP	GOPFLASH2	
0545	REP	5	LAST 1434	10,2476	54 155 1	GOMARK4	TS	PLAYTEM1	
0546	REP	1		10,2477	3 3634 0		CAP	MARCK4MSK	
0547	REP	5	LAST 1434	10,2500	1 2626 0		TOP	GOPFLASH2	MARK,PERFORM,FLASH,BLANK
0548	REP	6	LAST 1434	10,2501	54 155 1	GOMARKR	TS	PLAYTEM1	ENTRANCE FOR MARK GODSPR
0549	REP	55	LAST 1434	10,2502	3 4874 0		CAP	BIT15	
0550	REP	1		10,2503	1 2804 0		TOP	GODSPR2	
0551	REP	7	LAST 1434	10,2504	54 155 1	GOMARKPR	TS	PLAYTEM1	ENTRANCE FOR MARK GOPFLASHR
0552	REP	2	LAST 1434	10,2505	3 3157 1		CAP	MARCPMSK	
0553	REP	1		10,2506	1 2785 0		TOP	GODSPRS	
0559	REP	8	LAST 1434	10,2507	54 155 1	GOMARK2R	TS	PLAYTEM1	
0560	REP	2	LAST 1434	10,2510	3 3848 0		CAP	MPERPMSK	MARK, PERFORM, FLASH
0561	REP	2	LAST 1434	10,2511	1 2785 0		TOP	GODSPRS	
05611	REP	9	LAST 1434	10,2512	54 155 1	GOMARK3R	TS	PLAYTEM1	
05612	REP	2	LAST 1434	10,2513	3 3833 1		CAP	MARCK3MSK	
05613	REP	3	LAST 1434	10,2514	1 2785 0		TOP	GODSPRS	
0562	REP	183	LAST 1408	10,2515	3 4712 1	MAKEMARK	CAP	ONE	
0563	REP	1		10,2516	0 3063 1		TC	COPIES	
0564	REP	7	LAST 1433	10,2517	3 0100 0		CA	FLAGWRD4	IS NORM OR PRIO BUSY OR WAITING
0565	REP	1		10,2520	7 3847 0		MASK	OCT34300	
0566	REP	392	LAST 1419	10,2521	10 000 0		CCS	A	
0567	REP	1		10,2522	1 2580 1		TOP	CHKPRIO	
0568	REP	8	LAST 1434	10,2523	3 0100 0		CA	FLAGWRD4	IS MARK SLEEPING DUE TO ASTRO BUSY

## L DISPLAY INTERFACE ROUTINES

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0569	REP 38	LAST 1411	10,2524 7 4702 1	MASK	BIT9	
0570			10,2525 0 0008 1	EXTEND		
0571	REP 1		10,2526 1 2530 1	BZP	MARKPLAY	NO
0572	REP 110	LAST 1284	10,2527 1 5112 1	TCP	ENDOPJOB	
0594			10,2530 0 0004 0	MARKPLAY	INHINT	
0595	REP 29	LAST 1363	10,2531 4 4715 1	CS	FIVE	RESET MARK OVER NORM, SET MARK
0596	REP 9	LAST 1434	10,2532 7 0100 1	MASK	FLAGWRD4	
05965	REP 164	LAST 1434	10,2533 8 4712 1	AD	ONE	
0597	REP 10	LAST 1435	10,2534 54 100 1	TS	FLAGWRD4	
0598			10,2535 0 0003 1	RELINT		
0599	REP 1		10,2536 4 1070 0	GOGOMARK	CS	MARCPLAG
0600	REP 45	LAST 1415	10,2537 7 4706 0	MASK	BITS	
0601	REP 393	LAST 1434	10,2540 10 000 0	CCS	A	
0602	REP 1		10,2541 1 2544 1	TCP	MARCCOP	
0603	REP 1		10,2542 4 0370 1	CS	MARCNV	
0604	REP 2	LAST 1435	10,2543 54 370 1	TS	MARCNV	
0605	REP 165	LAST 1435	10,2544 3 4712 1	MARCCOP	CAF	ONE
0606	REP 1		10,2545 1 2744 0	TCP	PRIOPLAY	MARK INDEX
0607	REP 1		10,2546 3 0185 0	COPYTOGO	CA	MPAC2SAV
0608	REP 705	LAST 1433	10,2547 54 158 1	TS		MPAC +2
0609	REP 1		10,2550 50 184 1	COPYPACS	INDEX	COPINDEX
0610	REP 1		10,2551 3 3857 0	CAF		PRI0OCT
0611	REP 1		10,2552 54 182 0	TS		GENMASK
0612	REP 2	LAST 1435	10,2553 50 184 1	INDEX		COPINDEX
0613	REP 1		10,2554 3 1087 1	CAF		BRANKSAV
0614	REP 1		10,2555 54 180 1	TS		TEMPOR2
0615	REP 63	LAST 1410	10,2556 54 003 0	TS		EBANK
0616	REP 333	LAST 1433	10,2557 0 0002 0	TC	O	

R0617 PINCHK CHECKS TO SEE IF THE CURRENT MARK REQUEST IS MADE BY THE ASTRONAUT WHILE INTERRUPTING A GOPLAY DISPLAY (A NORMAL OR A PRIO). IF THE ASTRONAUT TRIES TO MARK DURING A PRIO, THE CHECK FAIL LIGHT GOES ON AND THE MARK REQUEST IS ENDED. IF HE TRIES TO MARK DURING A NORM, THE MARK IS ALLOWED. IN THIS CASE THE NORM IS PUT TO SLEEP UNTIL ALL MARKING IS FINISHED.

R0624 R0625 IF THE MARK REQUEST COMES FROM THE PROGRAM DURING A TIME THE ASTRONAUT IS NOT INTERRUPTING A NORMAL OR A PRIO, THE MARK REQUEST IS PUT TO SLEEP UNTIL THE +PRESENT ACTIVE DISPLAY IS RESPONDED TO BY THE ASTRONAUT.

0628	REP 11	LAST 1435	10,2560 3 0100 0	CHKPRIO	CA	FLAGWRD4	MARK ATTEMPT DURING PRIO
0629	REP 1		10,2561 7 3402 0	MASK		OCT24100	
0630	REP 394	LAST 1435	10,2562 10 000 0	CCS	A		
0631	REP 1		10,2563 1 3802 1	TCP		MARSLEEP	

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0632	REP 12 LAST 1435	10,2564 4 0100 1	Cs	FLAGWRD4	
0633	REP 35 LAST 1416	10,2565 7 4710 1	MASK	BIT3	
0634		10,2566 0 0004 0	INHINT		SET MARK OVER NORM
0635	REP 13 LAST 1436	10,2567 26 100 1	ADS	FLAGWRD4	
0636	REP 1	10,2570 1 2662 0	TCP	SETNORM	
0637	REP 3 LAST 1435	10,2571 3 0370 0	MARKPERF	CA	MARKNV
0638	REP 1	10,2572 7 4160 0	MASK		VERMASK
0639	REP 1	10,2573 1 3246 0	TCP		NVS0DSP
0640	REP 10 LAST 1434	10,2574 54 155 1	GODSP	TS	PLAYITEM1
0641	REP 271 LAST 1434	10,2575 3 4714 1	GODSP2	CAP	ZERO
0642	REP 6 LAST 1434	10,2576 1 2626 0	TCP		GOFLASH2
0643	REP 11 LAST 1436	10,2577 54 155 1	GODSPRET	TS	PLAYITEM1
0644	REP 55 LAST 1406	10,2600 3 4705 1	CAP	BITS	
0645	REP 7 LAST 1436	10,2601 1 2626 0	TCP		GOFLASH2
0646	REP 12 LAST 1436	10,2602 54 155 1	GODSPR	TS	PLAYITEM1
0647	REP 272 LAST 1436	10,2603 3 4714 1	GODSPR1	CAP	ZERO
0648	REP 3 LAST 1433	10,2604 54 160 1	GODSPR2	TS	PLAYITEM4
0649	REP 273 LAST 1436	10,2605 3 4714 1	CAP	ZERO	
0650	REP 1	10,2606 1 2767 1	TCP		GODSPRS1 * DONT MOVE

R0651 CLEANDSP IS USED FOR CLEARING OUT A NORMAL DISPLAY THAT IS PRESENTLY ACTIVE OR A NORMAL DISPLAY THAT IS  
R0653 SET UP TO BE STARTED OR RESTARTED.

R0654 NORMALLY THE USER WILL NOT NEED TO USE THIS ROUTINE SINCE A NEW NORMAL DISPLAY AUTOMATICALLY CLEARS OUT AN  
R0656 OLD DISPLAY.

R0657 CALLING SEQUENCE FOR CLEANDSP:-

A0658			TC	BANKCALL	
A0659			CADR	CLEANDSP	
0660	REP 274 LAST 1436	10,2607 3 4714 1	CLEANDSP	CAP	ZERO
0661	REP 13 LAST 1436	10,2610 54 155 1	REPLASH	TS	PLAYITEM1
0662	REP 1	10,2611 3 3632 0	CAP	REDOMASK	
0663	REP 6 LAST 1436	10,2612 1 2626 0	TCP	GOFLASH2	FLASH AND PERMIT
0664	REP 14 LAST 1436	10,2613 54 155 1	REPLASHR	TS	PLAYITEM1
0665	REP 2 LAST 1436	10,2614 3 3632 0	CAP	REDOMASK	
0666	REP 4 LAST 1434	10,2615 1 2765 0	TCP	GODSPRS	FLASH AND PERMIT

## L DISPLAY INTERFACE ROUTINES

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0667	REP 15 LAST 1436	10,2616 54 155 1	REGDSP TS	PLAYITEM1	
0668	REP 81 LAST 1404	10,2617 3 4675 1	CAP	BIT14	
0669	REP 9 LAST 1436	10,2620 1 2628 0	TCF	GOFLASH2	
0670	REP 16 LAST 1437	10,2621 54 155 1	REGDSPR TS	PLAYITEM1	
0671	REP 62 LAST 1437	10,2622 3 4875 1	CAP	BIT14	
0672	REP 2 LAST 1434	10,2623 1 2604 0	TCF	GODSPR2	
0673	REP 17 LAST 1437	10,2624 54 155 1	GOFLASH TS	PLAYITEM1	
0674	REP 52 LAST 1418	10,2625 3 4707 0	CAP	BIT4	LEAVE ONLY FLASH BIT SET
0675	REP 4 LAST 1436	10,2626 54 160 1	GOFLASH2 TS	PLAYITEM4	
0676	REP 1	10,2627 0 3050 1	TC	SAVELOCS	
0677		10,2630 0 0003 1		RELINT	
0678	REP 1	10,2631 1 2674 1	TCF	MAKEPLAY	BRANCH DIRECT WITH NO SEPARATE JOB CALL
0679	REP 16 LAST 1437	10,2632 54 155 1	PRIODSPR TS	PLAYITEM1	
0680	REP 1	10,2633 3 3651 0	CAP	BITS7+4	
0681	REP 5 LAST 1436	10,2634 1 2765 0	TCF	GODSPRS	
0682	REP 19 LAST 1437	10,2635 54 155 1	PRIODSP TS	PLAYITEM1	
0683	REP 2 LAST 1437	10,2636 3 3651 0	SETPRIO CAF	BITS7+4	
0684	REP 10 LAST 1437	10,2637 1 2626 0	TCF	GOFLASH2	
0685	REP 275 LAST 1436	10,2640 3 4714 1	MAKEPRIO CAP	ZERO	
0686	REP 3 LAST 1435	10,2641 54 164 0	TS	COPINDEX	
0687	REP 1	10,2642 0 3522 1	TC	LINUSCHR	
0688	REP 1	10,2643 1 2650 1	TCF	HIPRIO	LINUS RETURN
0689	REP 14 LAST 1436	10,2644 3 0100 0	CA	FLAGWRD4	
0690	REP 1	10,2645 7 3670 1	MASK	OCT20100	IS PRIO IN ENDIDLE OR BUSY
0691	REP 395 LAST 1435	10,2646 10 000 0	CCS	A	
0692	REP 1	10,2647 1 2723 1	TCP	PRIOBORT	YES, ABORT
0693	REP 15 LAST 1437	10,2650 3 0100 0	HIPRIO CA	FLAGWRD4	MARK ACTIVE
0694	REP 1	10,2651 7 5612 0	MASK	OCT40400	
0695		10,2652 0 0006 1	EXTEND		
0696	REP 1	10,2653 1 2856 1	BZF	ASKIFNRM	NO
0697	REP 276 LAST 1437	10,2654 3 4714 1	SETPRIO CAF	ZERO	
0698	REP 1	10,2655 1 3122 1	TCF	JOBXCHS	
0699	REP 16 LAST 1437	10,2656 3 0100 0	ASKIFNRM CA	FLAGWRD4	NORMAL ACTIVE

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0700	REP 1	10,2657	T 3666 0	MASK	OCT10200	BITS 13+8
0701		10,2660	0 0006 1	EXTEND		
0702	REP 1	10,2661	1 2664 0	BZP	OCTOCOPY	NO
0703	REP 166	LAST 1435	10,2662 3 4712 1	SETNORM	CAP	ONE
0704	REP 2	LAST 1437	10,2663 1 3122 1	TCP	JOBXCHS	
0705	REP 1		10,2664 0 3082 0	OCTOCOPY	TC	COPYNORM
0706	REP 1		10,2665 0 3333 1	TC	WITCHONE	
0707	REP 8	LAST 1407	10,2666 0 5074 1	TC	JOBWAKE	
0708	REP 1		10,2667 0 3350 1	TC	XCHTOEND	
0709	REP 22	LAST 1384	10,2670 3 0025 0	REDOPRIO	CA	TIME1
0710	REP 1		10,2671 55<147 0	TS	PRIOTIME	SAVE TIME PRIODSP SENT OUT
0711	REP 277	LAST 1437	10,2672 3 4714 1	KEEPPIRO	CAP	ZERO
0712	REP 2	LAST 1435	10,2673 1 2744 0	TCP	PRIOPLAY	START UP PRIO DISPLAY
0713	REP 28	LAST 1410	10,2674 3 0167 1	MAKEPLAY	CA	PRIORITY
07131	REP 3	LAST 1410	10,2675 7 7674 1	MASK	PRI037	SAVE USERS PRIORITY
07132	REP 1		10,2676 54 163 1	TS	USERPRIO	
07133	REP 1		10,2677 3 7670 1	CAP	PRI033	
07134	REP 10	LAST 815	10,2700 0 5103 0	TC	PRI0CHNG	RAISE PRIORITY FOR PAST JOBS AFTER WAKE
07135	REP 5	LAST 1437	10,2701 3 0160 0	CA	PLAYITEM4	
0714	REP 1		10,2702 7 3650 0	MASK	BITS15+7	
0715	REP 398	LAST 1437	10,2703 10 000 0	CCS	A	
0716	REP 1		10,2704 1 2640 0	TCP	MAKEPRI0	ITS PRIO
0717	REP 1		10,2705 1 2707 1	TCP	IPLEGAL	
0718	REP 1		10,2706 1 2515 0	TCP	MAKEMARK	ITS MARK
0719	REP 75	LAST 1408	10,2707 3 4711 1	IPLEGAL	CAP	TWO
0720	REP 4	LAST 1437	10,2710 54 164 0	TS	COPINDEX	
0721	REP 2	LAST 1437	10,2711 0 3522 1	TC	LINUSCHR	
0722	REP 1		10,2712 1 2725 1	TCP	OCTOPLAY	LINUS RETURN
0723	REP 3	LAST 198	10,2713 4 1071 1	CS	EBANKITEM	
0724	REP 53	LAST 1437	10,2714 7 4707 1	MASK	BIT4	
0725	REP 397	LAST 1438	10,2715 10 000 0	CCS	A	
0726	REP 2	LAST 1438	10,2716 1 2725 1	TCP	OCTOPLAY	NO
0727	REP 17	LAST 1437	10,2717 3 0100 0	CA	FLAGWRD4	
0728	REP 1		10,2720 7 3841 0	MASK	NRUSMASK	WAS NORM ASLEEP
0729			10,2721 0 0006 1	EXTEND		ARE ANY NORMS ASLEEP
0730	REP 3	LAST 1438	10,2722 1 2725 1	BZP	OCTOPLAY	NO

## L DISPLAY INTERFACE ROUTINES

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0731	REP	6	LAST 1410	10,2723 0 5622 1	PRIOSORT TC	POODOO	
0732				10,2724 01502 1	OCT	1502	
0733	REP	1		10,2725 0 3064 0	OKTOPLAY TC	CPIES2	
07331	REP	2	LAST 1438	10,2726 3 0163 0	CA	USERPRIO	
07332				10,2727 0 0006 1	EXTEND		
07333	REP	24	LAST 1378	10,2730 04 007 1	ROR	SUPERBNK	
07334	REP	3	LAST 193	10,2731 54 386 0	TS	RESTREG	
0737	REP	18	LAST 1438	10,2732 3 0100 0	CA	FLAGWRD4	PRIOR MARK GOING
0738	REP	1		10,2733 7 3842 0	MASK	PMASK	
0739	REP	398	LAST 1438	10,2734 10 000 0	CCS	A	
0740	REP	1		10,2735 1 3102 0	TCP	GOSLEEPS	YES
0741				10,2736 1 2740 1	TCP	+2	
0742	REP	2	LAST 1439	10,2737 1 3102 0	TCP	GOSLEEPS	MARK GOING
0743	COULD PUT NORM BUSY		CHECK HERE TO SAVE TIME				
0744	REP	2	LAST 1438	10,2740 0 3333 1	TC	WITCHONE	IS IT NVSUB BUSY, ENDIDLE OR NOONE
0745	REP	9	LAST 1438	10,2741 0 5074 1	TC	JOBWAKE	
0746	REP	2	LAST 1438	10,2742 0 3350 1	TC	XCHTOEND	
0747	REP	76	LAST 1438	10,2743 3 4711 1	PLAYJUM1	CAP	TWO
0748	REP	5	LAST 1438	10,2744 54 184 0	PRIOPLAY	TS	COPINDEX
0749	REP	1		10,2745 1 3216 0	TCP	GOPLAY	
0750	REP	20	LAST 1437	10,2746 54 155 1	EXDSPRET	TS	PLAYITEM1
0751	REP	2	LAST 154	10,2747 3 7703 1	CAP	BIT15+6	
0752	REP	11	LAST 1437	10,2750 1 2626 0	TCP	GOFLASH2	
0753	REP	2	LAST 715	10,2751 55<045 0	GOPERF1	TS	NORMITEM1
0754	REP	1		10,2752 3 3824 1	CAP	V01N25	STORE DESIRED CHECKLIST VALUE USED TO DISPLAY CHECKLIST VALUE IN R1
0755	REP	21	LAST 1439	10,2753 54 155 1	GOPERFS	TS	PLAYITEM1
0756	REP	1		10,2754 3 3823 0	CAP	PERFMASK	LEAVE ONLY FLASH, PERFORM, BLANKING
0757	REP	12	LAST 1439	10,2755 1 2626 0	TCP	GOFLASH2	
0758	REP	22	LAST 1439	10,2756 54 155 1	GOPERF2	TS	PLAYITEM1
0759	REP	1		10,2757 3 3827 1	CAP	PERF2MSK	DESIRED VERB-NOUN TO DISPLAY R1,R2,R3
0760	REP	13	LAST 1439	10,2760 1 2626 0	TCP	GOFLASH2	
0764	REP	1		10,2761 0 3043 0	GOPERF4	TC	PURRS4
0765	REP	14	LAST 1439	10,2762 1 2626 0	TCP	GOFLASH2	

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## L DISPLAY INTERFACE ROUTINES

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0766	REP 23	LAST 1439	10,2763 54 155 1	OQFLASHR TS	PLAYITEM1	
0767	REP 54	LAST 1438	10,2764 3 4707 0	CAP	BIT4	LEAVE ONLY FLASH BIT SET
0768	REP 6	LAST 1438	10,2765 54 160 1	OQSPRS TS	PLAYITEM4	
0769	REP 48	LAST 1403	10,2766 3 6214 0	CAP	THREE	
0770						
0771	REP 9	LAST 1407	10,2767 0 0004 0	OQSPRS1 INHINT		IMMEDIATE RETURN IS CALL CADR +4
			10,2770 54 072 0	TS	RUPTRG3	
0772	REP 29	LAST 1436	10,2771 3 0167 1	CA	PRIORITY	MAKE DISPLAY ONE HIGHER THAN USER
0773	REP 4	LAST 1436	10,2772 7 7674 1	MASK	PRIODT	
0774	REP 11	LAST 1187	10,2773 54 063 0	TS	NEWPRIO	
07741	REP T	LAST 1440	10,2774 3 0160 0	CA	PLAYITEM4	IS THIS A FLASHING R DISPLAY
07742	REP 55	LAST 1440	10,2775 T 4707 1	MASK	BIT4	
07743	REP 399	LAST 1439	10,2776 10 000 0	CCS	A	
07744	REP 1		10,2777 1 3005 0	TCP	VACDSP	YES, MAKE DISPLAY JOB A VAC
07745	REP 12	LAST 1440	10,3000 3 0083 1	CA	NEWPRIO	NO, MAKE DISPLAY JOB A NOVAC
07746	REP 34	LAST 1417	10,3001 0 5027 1	TC	NOVAC	
07747	REP T	LAST 664	E7,1777	BBANK	WHOCARES	
07748	REP 2	LAST 1437	10,3002 0 2674 0	ZCADR	MAKEPLAY	
07749	REP 1		10,3003 20107 0			
			10,3004 1 3013 1	TCP	BOTHJOBS	
0775	REP 35	LAST 1410	10,3005 3 0006 1	VACDSP	CA	BBANK
0776			10,3008 0 0006 1	EXTEND		
0777	REP 25	LAST 1439	10,3007 04 007 1	ROR	SUPERBANK	
0778	REP 228	LAST 1415	10,3010 54 001 1	TS	L	
0779	REP 1		10,3011 3 3865 1	CAP	MAKEGEN	
0780	REP 3	LAST 411	10,3012 0 5053 1	TC	SPVAC	
0781	REP 2	LAST 1437	10,3013 0 3050 1	BOTHJOBS TC	SAVELOC	COPY TEMPS INTO PERMANENT REGISTERS
0782			10,3014 0 0006 1	EXTEND		
0783	REP T06	LAST 1435	10,3015 3 0156 0	DCA	MPAC +1	SAVE NVWORD AND USERS MPAC +2
0784	REP 25	LAST 1417	10,3016 50 064 0	INDEX	LOCCTR	
0785	REP T07	LAST 1440	10,3017 52 156 1	DXCH	MPAC +1	
0786			10,3020 0 0006 1	EXTEND		
0787	REP T08	LAST 1440	10,3021 3 0160 0	DCA	MPAC +3	SAVE USERS CADR, FLAGS AND BBANK
0788	REP 26	LAST 1440	10,3022 50 064 0	INDEX	LOCCTR	
0789	REP T09	LAST 1440	10,3023 52 160 1	DXCH	MPAC +3	
0790	REP 27	LAST 1440	10,3024 3 0064 0	CA	LOCCTR	
0791	REP T10	LAST 1440	10,3025 54 161 0	TS	MPAC +5	
0792	REP 1		10,3026 0 3055 1	TC	SAVELOC	
0793			10,3027 0 0003 1	RELINT		

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## L DISPLAY INTERFACE ROUTINES

0794	REF 9	LAST 1372	10,3030	1 4577 1	TCP	BANKJUMP	CALL CADR +4
0795	REF 3	LAST 1439	10,3031	55=045 0	GOPERP1R TS	NORMITEM1	DESIRED CHECKLIST VALUE
0796	REF 2	LAST 1439	10,3032	3 3824 1	CAP	V01N25	DISPLAYS CHECKLIST VALUE IN R1
0797	REF 24	LAST 1440	10,3033	54 155 1	GOPERPRS TS	PLAYITEM1	
0798	REF 2	LAST 1439	10,3034	3 3823 0	CAP	PERFMASK	LEAVE ONLY FLASH, PERFORM, BLANKING
0799	REF 6	LAST 1437	10,3035	1 2785 0	TCP	GODSPRS	
0800	REF 25	LAST 1441	10,3036	54 155 1	GOPERP2R TS	PLAYITEM1	DESIRED VERB-NOUN TO DISPLAY R1,R2,R3
0801	REF 2	LAST 1439	10,3037	3 3827 1	CAP	PERF2MSK	
0802	REF 7	LAST 1441	10,3040	1 2785 0	TCP	GODSPRS	
0803	REF 2	LAST 1439	10,3041	0 3043 0	GOPERP4R TC	PURRS4	
0807	REF 8	LAST 1441	10,3042	1 2785 0	TCP	GODSPRS	
0808	REF 7	LAST 848	10,3043	55=131 1	PURRS4	TS	OPTION1 DESIRED OPTION CODE
0809	REF 1		10,3044	3 3830 1	CAP	V04N06	
0810	REF 26	LAST 1441	10,3045	54 155 1	TS	PLAYITEM1	
0811	REF 1		10,3046	3 3831 0	CAP	PERF4MSK	FLASH,PERFORM AND BLANK R3
0812	REF 334	LAST 1435	10,3047	0 0002 0	TC	0	
0813			10,3050	0 0004 0	SAVELOCs	INHINT	
0815	REF 1		10,3051	4 3840 1	CS	OCT3400	BRANK BITS
0816	REF 8	LAST 1440	10,3052	7 0160 1	MASK	PLAYITEM4	
0817	REF 64	LAST 1435	10,3053	8 0003 1	AD	BRANK	
0818	REF 9	LAST 1441	10,3054	54 160 1	TS	PLAYITEM4	
0819	REF 335	LAST 1441	10,3055	22 002 0	SAVELOCr	LXCH	0
0820	REF 6	LAST 1409	10,3058	0 4804 1	TC	MAKECADR	
0821	REF 1		10,3057	54 157 0	TS	PLAYITEM3	
0822	REF 10	LAST 1440	10,3060	6 0072 1	AD	RUPTREG3	NOT USED FOR NON R ROUTINES
0823	REF 229	LAST 1440	10,3061	0 0001 0	TC	L	
0824	REF 278	LAST 1438	10,3062	3 4714 1	COPYNORM	CAP	ZERO
0825	REF 6	LAST 1439	10,3063	54 184 0	COPIES	TS	COP INDEX
0826			10,3064	0 0004 0	COPIES2	INHINT	
0827	REF 10	LAST 1441	10,3065	3 0180 0	CA	PLAYITEM4	FLAGWORD
0828	REF 7	LAST 1441	10,3066	50 164 1	INDEX	COP INDEX	
0829	REF 2	LAST 1435	10,3067	55=067 0	TS	BRANKSAV	EQUIV TO DSPPLG

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## L DISPLAY INTERFACE ROUTINES

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0830	REP	1		10,3070	7 3856 0	MASK	CADRMASK				
0831				10,3071	0 0006 1	EXTEND					
0832	REP	1		10,3072	1 3076 1	B2P	SKIPADD				
0833	REP	2	LAST 1441	10,3073	3 0157 1	CA	PLAYITEM3				
0834	REP	8	LAST 1441	10,3074	50 164 1	INDEX	COPINDEX				
0835	REP	3	LAST 173	10,3075	54 372 0	TS	CADRPLSH				
0836	REP	27	LAST 1441	10,3076	3 0155 0	SKIPADD	CA	PLAYITEM1			
0837	REP	9	LAST 1442	10,3077	50 164 1	INDEX	COPINDEX				
0838	REP	1		10,3100	54 367 1	TS	NWORD				
0842	REP	1		10,3101	1 3357 1	TCF	RELINTQ				
0843	REP	10	LAST 1442	10,3102	50 164 1	GOSLEEP	INDEX	COPINDEX			
0844	REP	2	LAST 1435	10,3103	3 3857 0	CA	PRIOCCT				
0845	REP	1		10,3104	7 3108 1	MASK	WAITMASK				
0846	REP	1		10,3105	0 7717 1	TC	UPENT2				
0847				10,3106	03004 0	WAITMASK	OCT	3004			
0848	REP	167	LAST 1438	10,3107	4 4712 0	CS	ONE				
0849	REP	11	LAST 1442	10,3110	6 0164 1	AD	COPINDEX				
0850	REP	1		10,3111	54 154 0	TS	PACEREG				
0851	REP	2	LAST 1442	10,3112	50 154 1	XCHSLEEP	INDEX	PACEREG			
0852	REP	1		10,3113	3 3838 1	CAP	WAKECADR				
0853				10,3114	0 0004 0	INHINT					
0854	REP	10	LAST 1439	10,3115	0 5074 1	TC	JOBWAKE				
0855	REP	3	LAST 1439	10,3116	0 3350 1	TC	XCHTOEND				
0858	REP	3	LAST 1442	10,3117	50 154 1	INDEX	PACEREG				
0859	REP	2	LAST 1442	10,3120	3 3838 1	CAP	WAKECADR				
0860	REP	7	LAST 1409	10,3121	1 5070 1	TCF	JOBSCLEEP				
0861	REP	4	LAST 1442	10,3122	54 154 0	JOBXCHS	TS	PACEREG			
0862	REP	3	LAST 1439	10,3123	0 3333 1	TC	WITCHONE				
0863	REP	11	LAST 1442	10,3124	0 5074 1	TC	JOBWAKE				
0864	REP	5	LAST 1442	10,3125	3 0154 1	CA	PACEREG				
0865	REP	28	LAST 1440	10,3126	50 064 0	INDEX	LOCCTR				
0866	REP	6	LAST 1442	10,3127	54 154 0	TS	PACEREG				
0867	REP	1		10,3130	3 3143 1	CAP	XCHOADD				
0868	REP	1		10,3131	0 3351 0	TC	XCHNYLOC				
0869	REP	7	LAST 1442	10,3132	50 154 1	INDEX	PACEREG				
0870	REP	1		10,3133	3 3860 1	CA	MARKOCT				
0871	REP	1		10,3134	7 3662 1	MASK	IDLESLEEP				
0872	REP	1		10,3135	0 7735 1	TC	DOWNTENT2				
0873				10,3136	74004 0	IDLEMASK	OCT	74004	* DONT MOVE		

## L DISPLAY INTERFACE ROUTINES

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0874	REFP	8	LAST	1442	10,3137	50 154 1	INDEX	PACEREG		
0875	REFP	46	LAST	1435	10,3140	3 4706 1	CA	B1TS	BIT SHOWS PRIO INTERRUPTED NORM OR MARK BITS FOR MARK, BIT4 FOR NORMAL	
0876	REFP	22	LAST	1401	10,3141	6 4710 0	AD	FOUR		
0877	REFP	2	LAST	1442	10,3142	0 7717 1	TC	UPENT2		
0878	REFP	1			10,3143	03112 0	XCHOADD	GENADR XCHSLEEP	FLAG ROUTINE DOES RELINT * DONT MOVE	
0879	REFP	19	LAST	1439	10,3144	3 0100 0	CA	FLAGWRD4	IF BIT3 THEN MARK OVER NORM	
0880	REFP	36	LAST	1438	10,3145	7 4710 1	MASK	B1T3	USED AS GENADR FOR JOBWAKE	
0881	REFP	400	LAST	1440	10,3146	10 0000 0	COS	A		
0882	REFP	2	LAST	1435	10,3147	0 2530 0	GENMARK	TC	MARPLAY	
0883	REFP	2	LAST	1438	10,3150	1 2864 0	TCP	OKTOCOPY		
0884	REFP	279	LAST	1441	10,3151	3 4714 1	MARPLAY	CAP	ZERO	
0885	REFP	2	LAST	1435	10,3152	54 160 1	WAKEPLAY	TS	TEMPOR2	
0886	REFP	3	LAST	1443	10,3153	50 160 0	INDEX	TEMPOR2		
0887	REFP	1			10,3154	3 3852 0	CA	BITS5+11		
0888	REFP	23	LAST	1443	10,3155	6 4710 0	AD	FOUR		
0889	REFP	2	LAST	1442	10,3156	0 7735 1	TC	DORNENT2		
0890					10,3157	40010 1	MARKPMK	OCT	40010 ***DONT MOVE	
0891	REFP	4	LAST	1443	10,3180	50 180 0	INDEX	TEMPOR2		
0892	REFP	3	LAST	1442	10,3181	3 3838 1	CAP	WAKEADR		
0893					10,3182	0 0004 0	INHINT			
0894	REFP	12	LAST	1442	10,3183	0 5074 1	TC	JOBWAKE		
0895	REFP	1			10,3184	1 3463 1	TCP	ENDRET		
R0896									ALL .1 RESTARTS BRANCH DIRECTLY TO INITDSP. NORMAL DISPLAYS ARE THE ONLY DISPLAYS ALLOWED TO USE .1 RESTARTS	
R0898									INITDSP FIRST RESTORES THE EBANK AND THE SUPERBANK TO THE MOST RECENT NORMAL EBANK AND SUPERBANK.	
R0900									IF THE MOST RECENT NORMAL DISPLAY REQUEST WAS NOT FINISHED, CONTROL IS SENT BACK TO THE LAST NORMAL USER.	
R0902									OTHERWISE THE NORMAL DISPLAY SET UP IN THE NORMAL DISPLAY REGS IS STARTED UP IMMEDIATELY.	
0904	REFP	4	LAST	1438	10,3165	3 1071 0	INITDSP	CA	EBANKITEM	RESTORE MOST RECENT NORMAL EBANK
0905	REFP	65	LAST	1441	10,3168	54 003 0		TS	EBANK	
0906	REFP	4	LAST	1439	10,3167	3 0366 1		CA	RESTREG	SUPERBANK AND JOB PRIORITY
0907	REFP	1			10,3170	0 4668 0		TC	SUPERSW	RESTORE SUPERBANK
0908	REFP	5	LAST	1440	10,3171	7 7674 1		MASK	PRI037	
0909	REFP	11	LAST	1438	10,3172	0 5103 0		TC	PRI0CHNG	
0910	REFP	49	LAST	1440	10,3173	4 8214 1		CS	THREE	
0911	REFP	4	LAST	612	10,3174	8 0374 1		AD	TEMPPFLSH	
0912	REFP	10	LAST	1441	10,3175	1 4577 1		TCP	BANKJUMP	
0913					10,3176	0 0003 1	PINBRANCH	RELINT		FOR COPIN USERS
09135	REFP	1			10,3177	3 1072 0	CA	MARK2PAC		NEEDED TO SAVE MPAC +2 FOR MARK USERS
0914	REFP	711	LAST	1440	10,3200	54 158 1		TS	MPAC +2	ONLY
0915	REFP	20	LAST	1443	10,3201	3 0100 0		CA	FLAGWRD4	PINBRANCH CONDITION

L	DISPLAY INTERFACE ROUTINES						USER'S PAGE NO. 25	E0 S4	
0916	REP	1		10,3202	7 7707 1		MASK	PINMASK	
0917	REP	401	LAST 1443	10,3203	10 000 0		CCS	A	
0918				10,3204	1 3207 0		TCP	+3	
0919	REP	1		10,3205	1 3817 0		TCP	ERASER	** NOTHING IN ENDIDLE
0920	REP	3	LAST 1443	10,3206	1 2530 1		TCP	MARKPLAY	
0921	REP	54	LAST 1414	10,3207	0 5435 0	NORMENCH	TC	UPFLAG	SET PINBRANCH BIT
0922	REP	1		10,3210	00105 0		ADRES	PINBRPLG	
0923	REP	83	LAST 1437	10,3211	3 4675 1		CAP	BIT14	
0924	REP	21	LAST 1443	10,3212	7 0100 1		MASK	FLAGWORD4	
0925	REP	402	LAST 1444	10,3213	10 000 0		CCS	A	
0926	REP	1		10,3214	1 2872 1		TCP	KEEPPRIOR	
0927	REP	1		10,3215	1 2743 1		TCP	PLAYJUM1	
0928	REP	1		10,3218	0 2550 0	NVDSP	TC	COPYPACS	
09281	REP	5	LAST 1443	10,3217	3 0180 0		CA	TEMPOR2	
09282	REP	23	LAST 1410	10,3220	7 4716 1		MASK	SEVEN	SET UP BLANK BITS FOR NVMONOPT IN CASE
09283	REP	230	LAST 1441	10,3221	54 001 1		TS	L	USER REQUESTS BLANKING MONITOR
0929	REP	51	LAST 1411	10,3222	4 4678 0		CS	BIT13	
0930	REP	12	LAST 1442	10,3223	50 184 1		INDEX	COPINDEX	
0931	REP	1		10,3224	7 1087 0		MASK	DSPFLG	
0932	REP	13	LAST 1444	10,3225	50 184 1		INDEX	COPINDEX	
0933	REP	2	LAST 1444	10,3228	55=087 0		TS	DSPFLG	
0934	REP	32	LAST 1410	10,3227	7 4703 0		MASK	BIT8	
0935	REP	5	LAST 1145	10,3230	54 141 1		TS	TEM1	BIT8 SET IF DRC MARK PERFORM DISPLAY
0936	REP	712	LAST 1443	10,3231	3 0156 0		CA	MPAC +2	
0937	REP	2	LAST 1435	10,3232	54 165 1		TS	MPAC2SAV	
0938	REP	2	LAST 1443	10,3233	55=072 1		TS	MARK2PAC	* FOR DISK ONLY *
0939	REP	14	LAST 1444	10,3234	50 164 1		INDEX	COPINDEX	
0940	REP	2	LAST 1442	10,3235	10 367 1		CCS	NWORD	
0941	REP	1		10,3236	1 3245 0		TCP	NVDSP1	
0942	REP	1		10,3237	1 3381 1		TCP	CLEANEND	
0943	REP	4	LAST 1436	10,3240	4 0370 1		CS	MARCNV	
0944	REP	5	LAST 1444	10,3241	54 370 1		TS	MARCNV	IN CASE MARKPLAY AWAKENED AFTER SLEEPING
0945	REP	12	LAST 1405	10,3242	7 6043 1		MASK	LOW7	
0948	REP	1		10,3243	6 3643 0		AD	V05N00M1	
0947	REP	6	LAST 1444	10,3244	6 0141 0		AD	TEM1	
0948	REP	188	LAST 1442	10,3245	6 4712 1	NVDSP1	AD	ONE	
0949	REP	1		10,3246	0 4171 1	NV50DSP	TC	NVMONOPT	
0950	REP	1		10,3247	1 3373 1		TCP	REST	
0951	REP	6	LAST 380	10,3250	0 4447 1		TC	FLASHOFF	IF BUSY IN CASE OF EXTENDED VERB NON FLASH
0952	REP	1		10,3251	0 2548 1		TC	COPYTOGO	MPACS DESTROYED BY NVSUB

## L DISPLAY INTERFACE ROUTINES

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0953	REP 58	LAST 1416	10,3252 0 5447 0	TC	DOWNFLAG	UNSET SLEEPING BITS	
0954	REP 1		10,3253 00102 1	ADRES	MRONVPLG		
09541	REP 59	LAST 1445	10,3254 0 5447 0	TC	DOWNFLAG		
09542	REP 1		10,3255 00103 0	ADRES	NRMNVPLG		
09543	REP 60	LAST 1445	10,3256 0 5447 0	TC	DOWNFLAG		
09544	REP 1		10,3257 00104 1	ADRES	PRONVPLG		
0955	REP 6	LAST 1444	10,3260 3 0160 0	BLANKCHK	CA TEMPOR2	BLANK BITS 1,2,3 IF SET	
0956	REP 2	LAST 351	10,3261 0 4271 1	TC	BLANKSUB		
0957	REP 1		10,3262 1 3216 0	TOP	NVDSP		
0958	REP 47	LAST 1443	10,3263 3 4706 1	PERFCHEK	CAP BITS	BIT 5 FOR PERFORM	
0959	REP 7	LAST 1445	10,3264 7 0160 1	CCS	TEMPOR2		
0960	REP 403	LAST 1444	10,3265 10 0000 0	CCS	A	IS THIS A GOPERF DISPLAY	
0961	REP 1		10,3266 1 3311 0	TOP	1STOR2ND	YES	
0962	REP 56	LAST 1440	10,3267 3 4707 0	GOANIDLE	CAP	BIT4	
0963	REP 8	LAST 1445	10,3270 7 0160 1	MASK	TEMPOR2		
0964	REP 404	LAST 1445	10,3271 10 0000 0	CCS	A		
0965	REP 1		10,3272 1 3406 1	TOP	FLASHSUB	IT IS	
0966	REP 9	LAST 1445	10,3273 4 0160 1	CS	TEMPOR2	IS THIS A GODSPRET	
0967	REP 58	LAST 1436	10,3274 7 4705 0	MASK	BIT6		
0968	REP 405	LAST 1445	10,3275 10 0000 0	CCS	A		
0969	REP 1		10,3276 1 3303 0	TOP	ISITN00		
09691	REP 15	LAST 1444	10,3277 50 164 1	INDEX	COPINDEX		
09692	REP 4	LAST 1442	10,3300 3 0372 1	CA	CADRFLSH		
09693	REP 713	LAST 1444	10,3301 54 157 0	TS	MPAC +3		
09694	REP 1		10,3302 1 3501 1	TOP	ENDIT		
0972	REP 16	LAST 1445	10,3303 50 164 1	ISITN00	INDEX	COPINDEX	IS THIS A PASTE
0973	REP 3	LAST 1444	10,3304 3 0367 0	CA	NWORD		CHECK MADE FOR PINBRNC AND PRIO ON MARK
0974	REP 13	LAST 1444	10,3305 7 8043 1	MASK	LOW7		
0975			10,3306 0 0006 1	EXTEND			YES, ASSUME PASTE ALWAYS ON FLASH
0976	REP 2	LAST 1445	10,3307 1 3406 1	B2P	FLASHSUB		
0977	REP 111	LAST 1435	10,3310 1 5112 1	TOP	ENDOFJOB		NOT FLASH, NOT GOPERF, THEREFORE EXIT
0978	REP 10	LAST 1445	10,3311 3 0160 0	1STOR2ND	CA	TEMPOR2	
0979	REP 52	LAST 1444	10,3312 7 4676 0	MASK	BIT13		
0980	REP 406	LAST 1445	10,3313 10 0000 0	CCS	A		
0981	REP 1		10,3314 1 3267 0	TOP	GOANIDLE	SECOND	
0982	REP 53	LAST 1445	10,3315 3 4676 1	CA	BIT13		
0983	REP 17	LAST 1445	10,3316 50 164 1	INDEX	COPINDEX		
0984	REP 3	LAST 1444	10,3317 27<067 0	ADS	DSPPLG		
09845			10,3320 22 007 0	ZL			
0985			10,3321 0 0006 1	EXTEND			
0986	REP 1		10,3322 6 2571 0	BZMP	MARKPERF	IS IT MARK YES	

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## L DISPLAY INTERFACE ROUTINES

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0987	REP 35 LAST 1381	10,3323 7 4677 1	MASK	BIT12	
09871		10,3324 0 0006 1	EXTEND		
09872	REP 1	10,3325 1 3331 1	B2P	V50PASTE	
09874	REP 20 LAST 678	10,3326 4 1145 1	CS	NWORD1	
098741	REP 1	10,3327 6 3867 0	AD	V97N00	
09875	REP 2 LAST 1436	10,3330 1 3246 0	TCP	NV50DSP	
0988	REP 1	10,3331 3 3828 0	V50PASTE CAF	V50N00	
0989	REP 3 LAST 1446	10,3332 1 3246 0	TCP	NV50DSP	DISPLAY SECOND PART OF COPERP
0990	REP 48 LAST 1445	10,3333 4 4706 0	WITCHONE CS	BITS	
0991		10,3334 0 0006 1	EXTEND		TURN OFF KEY RELEASE LIGHT
0992	REP 35 LAST 1418	10,3335 03 0111 1	WAND	DSALMOUT	
0993	REP 22 LAST 1444	10,3336 3 0100 0	CA	FLAGWRD4	
0994	REP 1	10,3337 7 3644 0	MASK	NVBSMSK	
0995	REP 407 LAST 1445	10,3340 10 0000 0	CCS	A	
0996	REP 169 LAST 1444	10,3341 3 4712 1	CAF	ONE	
0997	REP 231 LAST 1444	10,3342 54 001 1	TS	L	
0998	REP 280 LAST 1443	10,3343 3 4714 1	CAP	ZERO	
0999	REP 232 LAST 1446	10,3344 50 001 0	INDEX	L	
1000	REP 11 LAST 370	10,3345 57-042 0	XCH	CADRSTOR	
1001		10,3346 0 0004 0	INHINT		
1002	REP 336 LAST 1441	10,3347 0 0002 0	TC	O	
1003	REP 6 LAST 360	10,3350 3 4233 1	XCHTOEND CAP	ENDINST	
1004	REP 29 LAST 1442	10,3351 56 064 0	XCHNYLOC XCH	LOCCTR	TC ENDOFJOB REPLACES GENADR IN LOC FOR
1005		10,3352 0 0006 1	EXTEND		WAS THIS ADDRESS SLEEPING
1006	REP 2 LAST 1442	10,3353 6 3357 0	B2MP	RELINTO	
1007	REP 30 LAST 1446	10,3354 56 064 0	XCH	LOCCTR	NO
1008	REP 31 LAST 1446	10,3355 50 064 0	INDEX	LOCCTR	YES
1009	REP 42 LAST 1407	10,3356 54 164 0	TS	LOC	
1010		10,3357 0 0003 1	RELINTO	RELINT	
1011	REP 337 LAST 1446	10,3360 0 0002 0	TC	O	BACK TO USER
1012	REP 5 LAST 777	10,3361 3 7667 1	CLEANEND CAP	PRI032	
1014	REP 33 LAST 1387	10,3362 0 5042 1	TC	PINDVAC	ONE LOWER THAN DISPLAYS SLEEPING
1015	REP 2 LAST 180	0371	BBANK= NVSAVE		
1016	REP 1	10,3363 04245 0	ZCADR JAMTERM		
1016	REP 1	10,3364 04100 1			
1017	REP 3 LAST 1445	10,3365 1 3407 0	TCP	FLASHSUB +1	
1018	REP 23 LAST 1446	10,3366 3 0100 0	ISITPRIO CA	FLAGWRD4	
1019	REP 1	10,3367 7 3414 1	MASK	ITISMASK	
1020		10,3370 0 0006 1	EXTEND		IS PINBRPLG, MARKIDFLG SET
1021	REP 2 LAST 1437	10,3371 1 2723 1	B2P	PRIOBORT	
1022	REP 112 LAST 1445	10,3372 1 5112 1	TCP	ENDOFJOB	

## L DISPLAY INTERFACE ROUTINES

1023	REP 12	LAST 1446	10,3373	11<042 1	REST	CCS	CADRSTOR	IS SOMEONE IN ENDIDLE YES
1024	REP 113	LAST 1446	10,3374	1 5112 1		TCP	ENDOPJOB	
1025	REP 1		10,3375	1 3377 0		TCP	RESTSLEP	
1026	REP 114	LAST 1447	10,3376	1 5112 1		TCP	ENDOPJOB	
1027	REP 2	LAST 1435	10,3377	3 0162 1	RESTSLEP	CA	GENMASK	SET NVSLEEP BITS
1028	REP 1		10,3400	7 3845 1		MASK	ASTROMSK	
1029	REP 3	LAST 1443	10,3401	0 7717 1		TC	UPENT2	
1030			10,3402	24100 0	OCT24100	OCT	24100	*** DONT MOVE
1031	REP 18	LAST 1445	10,3403	50 164 1		INDEX	COPINDEX	
1032	REP 1		10,3404	3 3835 1		CAP	NVCADR	
1033	REP 2	LAST 376	10,3405	0 4456 1		TC	NVSUBSY	BUSY OR ABORT IP ILLEGAL
1034	REP 4	LAST 359	10,3406	0 4443 0	FLASHSUB	TC	FLASHON	
1035	REP 19	LAST 1447	10,3407	3 0164 1		CA	COPINDEX	
1036	REP 1		10,3410	54 157 0		TS	COPMPAC	
1037	REP 3	LAST 1447	10,3411	3 0162 1		CA	GENMASK	
1038	REP 1		10,3412	7 3136 1		MASK	IDLEMASK	
1039	REP 4	LAST 1447	10,3413	0 7717 1		TC	UPENT2	
1040			10,3414	40040 1	ITISMASK	OCT	40040	*** ENDIDLE ALLOW *** DONT MOVE
1041	REP 2	LAST 188	10,3415	3 1073 1		CA	R1SAVE	
1042	REP 20	LAST 1447	10,3416	50 164 1		INDEX	COPINDEX	
1043	REP 37	LAST 1443	10,3417	7 4710 1		MASK	BIT3	
1044	REP 408	LAST 1446	10,3420	10 000 0		CCS	A	
1045	REP 1		10,3421	1 3506 0		TCP	UNSETR1	YES
1046	REP 13	LAST 1447	10,3422	11<042 1		CCS	CADRSTOR	
1047	REP 1		10,3423	1 3386 0		TCP	ISITPRIO	
1048	REP 2	LAST 1447	10,3424	1 3426 0		TCP	+2	
1049	REP 2	LAST 1447	10,3425	1 3386 0		TCP	ISITPRIO	
1050	REP 1		10,3426	0 4223 0		TC	ENDIDLE	
1051	REP 1		10,3427	1 3520 1	IDLERET1	TCP	TERMATE	
1052	REP 1		10,3430	1 3537 1		TCP	PROCEED	ENDIDLE RETURNS HERE ON PROCEED
1053	REP 1		10,3431	4 3654 1		CS	LOWLOAD	
1054	REP 714	LAST 1445	10,3432	6 0154 1		AD	MPAC	VERBREG
1055			10,3433	0 0006 1		EXTEND		
1056	REP 409	LAST 1447	10,3434	26 000 0		DIM	A	
1057			10,3435	0 0006 1		EXTEND		
1058	REP 1		10,3436	1 3807 1		BZF	LOADITIS	V21 OR V22 OR V23 ON DSKY
1059	REP 77	LAST 1439	10,3437	3 4711 1	OKTORET	CAF	TWO	
1060	REP 1		10,3440	54 161 0	ENDOUT	TS	OUTHERE	

L	DISPLAY INTERFACE ROUTINES						USER#S PAGE NO.	29	E0 S4	
1061	REP	24	LAST	1446	10,3441	3 0100 0	CA	FLAGWORD4	CHECK NATURE OF ENDIDLE RETURN	
1062	REP	15	LAST	1379	10,3442	7 4105 0	MASK	OCT80000		
1063	REP	410	LAST	1447	10,3443	10 0000 0	CCS	A		
1064	REP	1			10,3444	1 3447 1	TCP	TIMECHECK	PRI0 ENDIDLE RETURN	
1065	REP	1			10,3445	1 3555 0	TCP	NORMRET	NORMAL ENDIDLE RETURN	
1066	REP	1			10,3446	1 3541 0	TCP	MARGRET	MARGRET ENDIDLE RETURN	
1067	REP	23	LAST	1436	10,3447	4 0025 1	TIMECHECK	CS	TIME1	
1068	REP	2	LAST	1436	10,3450	6 1147 1	AD	PRIOTIME		
1069	REP	411	LAST	1446	10,3451	10 0000 0	CCS	A		
1070					10,3452	4 0000 0	COM			
1071	REP	5	LAST	1384	10,3453	6 7700 1	AD	OCT37776		
1072	REP	170	LAST	1446	10,3454	6 4712 1	AD	ONE		
1073	REP	1			10,3455	6 3677 1	AD	-2SEC		
1074					10,3456	0 0008 1	EXTEND			
1075	REP	2	LAST	1444	10,3457	6 2672 0	BZMP	KEEPPRIO		
1076	REP	2	LAST	1446	10,3460	1 3555 0	TCP	NORMRET		
1084	REP	171	LAST	1446	10,3461	3 4712 1	NORMWAKE	CAP	ONE	
1085	REP	1			10,3462	1 3152 0	TCP	WAKEPLAY		
1086	REP	2	LAST	1447	10,3463	10 181 0	ENDRET	CCS	OUTHERE	
1087	REP	172	LAST	1446	10,3464	6 4712 1	AD	ONE		
1088					10,3465	1 3487 0	TCP	+2	NORMAL ENDIDLE EXIT	
1089	REP	115	LAST	1447	10,3466	1 5112 1	TCP	ENDOPJOB		
1090	REP	2	LAST	1447	10,3467	50 157 1	INDEX	COPMPAC		
1091	REP	5	LAST	1445	10,3470	6 0372 1	AD	CADRPLSH		
1092	REP	715	LAST	1447	10,3471	54 157 0	TS	MPAC +3		
1093	REP	4	LAST	1447	10,3472	3 0162 1	CA	GENMASK	REMOVE ENDIDLE AND PINBRANCH BITS	
1094	REP	1			10,3473	7 3475 0	MASK	PINIDMSK		
1095	REP	3	LAST	1443	10,3474	0 7735 1	TC	DOWNTENT2		
1096					10,3475	74044 1	PINIDMSK	OCT	*** DONT MOVE	
1097	REP	50	LAST	1443	10,3476	4 6214 1	CS	THREE		
1098	REP	2	LAST	231	10,3477	0 4170 0	TC	NVSUB	BLANK EVERYTHING EXCEPT MM	
1099					10,3500	1 3501 1	TCP	+1		
1100	REP	3	LAST	1439	10,3501	3 0163 0	ENDIT	CA	USERPRIO	RETURN TO USERS PRIORITY
1101	REP	6	LAST	1443	10,3502	7 7874 1	MASK	PRI037		
1102	REP	12	LAST	1443	10,3503	0 5103 0	TC	PRIODCHG		
1103	REP	716	LAST	1446	10,3504	3 0157 1	CA	MPAC +3		
1104	REP	11	LAST	1443	10,3505	1 4577 1	TCP	BANKJUMP		
1105	REP	21	LAST	1447	10,3506	50 164 1	UNSETR1	INDEX	COPINDEX	RESET REPEAT AND RETURN REQUEST
1106	REP	38	LAST	1447	10,3507	4 4710 1	CS	BIT3		
1107	REP	3	LAST	1447	10,3510	7 1073 0	MASK	R1SAVE		
1108	REP	4	LAST	1446	10,3511	55=073 0	TS	R1SAVE		

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## L DISPLAY INTERFACE ROUTINES

	REF	LAST	1448	10,3512	3 4714 1	CAF	ZERO	
	REF	2	LAST	1443	10,3513 0 4666 0	TC	SUPERSW	*** 205 ONLY MARKBRAIN USERS IN SUPERBANK 0
1109	REF 281	LAST 1448	10,3514	3 6214 0	-1	CAF	THREE	
1110	REF 2	LAST 1443	10,3513	0 4666 0		TC	COP INDEX	RETURN TO USERS IMMEDIATE RETURN LOC
1111	REF 51	LAST 1448	10,3514	3 6214 0	-1	CAF	AD	
1112	REF 22	LAST 1448	10,3515	50 164 1	IMMEDRET	INDEX	CADRPLSH	
1113	REF 6	LAST 1446	10,3516	6 0372 1		TCP	BANKJUMP	
1114	REF 12	LAST 1446	10,3517	1 4577 1				
1115	REF 282	LAST 1449	10,3520	3 4714 1	TERMATE	CAF	ZERO	ASTRONAUT TERMINATE (V34) RETURNS TO
1116	REF 1		10,3521	1 3440 0		TCP	ENDOUT	
1117	REF 11	LAST 1441	10,3522	4 0180 1	LINUSCHR CS	PLAYITEM4		IS THIS A LINUS
1118	REF 84	LAST 1444	10,3523	7 4675 0	MASK	BIT14		
1119	REF 412	LAST 1448	10,3524	10 000 0	CCS	A		
1120	REF 4	LAST 1372	10,3525	1 6706 1	TCP	Q+1		
1121	REF 3	LAST 1442	10,3526	4 0157 0	CS	PLAYITEM3		
1122	REF 23	LAST 1449	10,3527	50 164 1	INDEX	COP INDEX		
1123	REF 7	LAST 1449	10,3530	6 0372 1	AD	CADRPLSH		
1124			10,3531	0 0006 1	EXTEND			
1125			10,3532	1 3534 1	RZP	+2	YES	
1126	REF 336	LAST 1448	10,3533	0 0002 0	TC	0		
1127	REF 12	LAST 381	10,3534	11=012 1	CCS	DSLOCK		
1128	REF 118	LAST 1446	10,3535	0 5112 0	TC	ENDOFJOB		END THE NEW DISPLAY, ITS ALREADY ACTIVE
1129	REF 339	LAST 1449	10,3536	0 0002 0	TC	0		
R1130								MORE LOGIC COULD BE INCORPORATED HERE TO MAKE SURE A RECYCLE IS A RECYCLAND CONVERSELY THAT A LOAD IS A LOAD.
R1132	REF 173	LAST 1448	10,3537	3 4712 1	PROCEED	CAP ONE		ASTRONAUT PROCEED (V33) RETURNS
R1133	REF 2	LAST 1449	10,3540	1 3440 0	TCP	ENDOUT		
R1136								LASTPLAY CHECKS TO SEE IF (1) THE LAST NORMAL DISPLAY WAS EITHER INTERRUPTED BY A PRIO OR A MARK (MARK
R1140								COULD ONLY HAPPEN DURING PINBRANCH) OR IF (2) THE LAST NORMAL DISPLAY WAS REQUESTED WHILE A HIGHER PRIORITY
R1142								DISPLAY WAS GOING RESULTING IN THE NORMAL BEING PUT TO SLEEP.
R1143								IF EITHER OF THE ABOVE 2 CONDITIONS EXISTS , THE NORMAL DISPLAY IS AWAKENED TO GO TO PLAYJUM1 WHICH STARTS
R1145								UP THE MOST RECENT VALID NORMAL DISPLAY. IF THESE 2 CONDITIONS DO NOT EXIST, CONTROL GOES TO PLAYJUM1 WHICH IS
R1147								STARTED IMMEDIATELY WITH THE ASSUMPTION THAT THE MOST RECENT NORMAL DISPLAY IS ALREADY IN-ENDIDLE(DURING A
R1149								PINBRANCH) OR THAT A RESTART HAS OCCURRED AND THE DISPLAY CAN BE STARTED AS A .1 RESTART.
1163	REF 42	LAST 1391	10,3541	4 6211 1	MARCRET	CS SIX		
1164	REF 25	LAST 1448	10,3542	7 0100 1	MASK	FLAGWRD4	*** MAY MOVE DISPLAY FLAGWORD OUT OF	
1165			10,3543	0 0004 0	INHINT			
1166	REF 26	LAST 1449	10,3544	54 100 1	TS	FLAGWRD4		
1167			10,3545	0 0003 1	RELint		INHINT REALM	
1166	REF 2	LAST 1443	10,3546	1 3463 1	TCP	ENDRET		
1169	REF 2	LAST 1402	10,3547	3 7716 0	MARCOVER	CAP MINUS1		RUPTREG2 IS - MEANS ENDOFJOB TO ENDRET
1170	REF 3	LAST 1448	10,3550	54 161 0	TS	OUTHERE		

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L	DISPLAY INTERFACE ROUTINES							USER=S PAGE NO. 31	E0 34
1171	REP 27 LAST 1449	10,3551	3 0100 0	CA	FLAGWRD4				
1172	REP 15 LAST 1372	10,3552	7 4371 1	MASK	PRI030				
1173	REP 413 LAST 1449	10,3553	10 000 0	CCS	A				
1174	REP 1	10,3554	1 3207 0	TCP	NORMENCH				
1175	REP 28 LAST 1450	10,3555	3 0100 0	NORMRET	CA	FLAGWRD4			
1176	REP 2 LAST 1443	10,3556	7 3652 1	MASK	BITS5+11				
1177	REP 414 LAST 1450	10,3557	10 000 0	CCS	A				
1178	REP 1	10,3560	1 3151 0	TCP	MARKWAKE				
1179	REP 29 LAST 1450	10,3561	3 0100 0	CA	FLAGWRD4	NO			
1180	REP 1	10,3562	7 3853 0	MASK	BITS4+10	IS NORMAL INTERRUPTED OR WAITING			
1181	REP 415 LAST 1450	10,3563	10 000 0	CCS	A				
1182	REP 1	10,3564	1 3461 0	TCP	NORMWAKE	YES			
1183	REP 5 LAST 1443	10,3565	3 1071 0	CA	ERANKITEM				
1184	REP 6 LAST 1410	10,3566	7 4726 1	MASK	OCT50	NO, WAS IT A FLASH REQUEST			
1185	REP 416 LAST 1450	10,3567	10 000 0	CCS	A	OR A GODSPRT			
1186	REP 3 LAST 1449	10,3570	1 3463 1	TCP	ENDRET				
1187	REP 3 LAST 1446	10,3571	3 0371 1	CA	NVSAVE	YES			
1188		10,3572	0 0006 1	EXTEND					
1189	REP 4 LAST 1450	10,3573	1 3463 1	BZF	ENDRET				
1190	REP 4 LAST 648	10,3574	3 4762 0	CAF	PRI015				
1191		10,3575	0 0004 0	INHINT					
1192	REP 35 LAST 1440	10,3576	0 5027 1	TC	NOVAC				
1193	REP 4 LAST 1445	0367		ERANK=	NWORD				
1194	REP 2 LAST 1444	10,3577	02743 0	2ADR	PLAYJUM1				
1194		10,3600	20100 1						
1195	REP 5 LAST 1450	10,3601	1 3463 1	TOP	ENDRET				
1196	REP 30 LAST 1450	10,3602	3 0100 0	MARSLEEP	CA	FLAGWRD4			
1197	REP 3 LAST 1450	10,3603	7 3652 1	MASK	BITS5+11	IS MARK ALREADY IN			
1198	REP 417 LAST 1450	10,3604	10 000 0	CCS	A				
1199	REP 117 LAST 1449	10,3605	1 5112 1	TCP	ENDOFJOB				
11991	REP 3 LAST 1439	10,3606	1 3102 0	TCP	GOSLZEPS	YES			
1200	REP 3 LAST 1448	10,3607	50 157 1	LOADITIS	INDEX	COPMPAC			
1201	REP 5 LAST 1450	10,3610	3 0367 0	CA	NWORD				
1202	REP 14 LAST 1445	10,3611	7 6043 1	MASK	LOW7				
1203		10,3612	4 0000 0	COM					
1204	REP 717 LAST 1448	10,3613	6 0155 0	AD	MPAC +1	NONREG			
1205		10,3614	0 0006 1	EXTEND					
1206	REP 1	10,3615	1 3437 0	BZF	QKTOENT	NO, THEN LOAD IS VALID			
1207	REP 6 LAST 447	10,3616	1 3176 0	TCP	PINBRNCH	YES, ACCEPT LOAD BUT ASK FOR LAST AGAIN			
1208	REP 52 LAST 1449	10,3617	4 6214 1	ERASER	CS	THREE			
1209	REP 3 LAST 1448	10,3620	0 4170 0	TG	NVSUB				
1210	REP 118 LAST 1450	10,3621	1 5112 1	TCP	ENDOFJOB				

## L DISPLAY INTERFACE ROUTINES

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1211	REP 119 LAST 1450	10,3622	1 5112 1	TCP	ENDOFJOB	
1212		10,3623	00036 1	PERFMASK OCT	0036	FLASH, PERFORM, BLANK R2 AND R3
1213		10,3624	00231 1	V01N25 VN	00125	GOPERF3 VN DISPLAY BEFORE V50
1214		10,3625	01407 0	V08N07 VN	00607	
1215		10,3626	14400 0	V50N00 VN	5000	
1216		10,3627	00030 1	PERFMASK OCT	00030	FLASH, PERFORM
1217		10,3630	01006 0	V04N06 VN	00406	
1218		10,3631	00014 1	PERFMASK OCT	14	FLASH, BLANK R3
1219	REP 7 LAST 1450	10,3176		GOAGIN EQUALS PINBRNCH		
1220		10,3632	20010 1	REDOMASK OCT	20010	BITS 4 AND 14
1221		10,3633	40230 1	MARK3MSK OCT	40230	MARK, DECIMAL NOUN, PERFORM, FLASH
1222		10,3634	40036 0	MARK4MSK OCT	40036	MARK, PERFORM, FLASH, BLANK 2 AND 3
1223	REP 1	10,3635	20670 1	NVCADR CADR	REDOPRIO	
1224	REP 4 LAST 1444	10,3636	20530 0	WAKECADR CADR	MARPLAY	
1225	REP 3 LAST 1450	10,3637	20743 0	CADR	PLAYJUM1	
1226		10,3640	03400 0	OCT3400 OCT	3400	ERANK MASK
1227		10,3641	11210 1	NBUSMASK OCT	11210	
1228		10,3642	66521 1	PMASK OCT	66521	
1229	REP 4 LAST 356	4160		VEREMASK = MID7		(OCT 37600)
1230		10,3643	01177 1	V05N00M1 OCT	1177	V05 MINUS ONE
1231	REP 1	10,2461		GODSP EQUALS GOMARK		
1232	REP 1	10,2501		GODSPR EQUALS GOMARKR		
1233	REP 9 LAST 691	10,2465		GODSPP EQUALS GOMARKP		
1234	REP 5 LAST 691	10,2504		GODSPPR EQUALS GOMARKPR		
1235	REP 4 LAST 563	5423		ENDEXT EQUALS ENDMARK		
1236	REP 14 LAST 1186	0165		MPAC2SAV EQUALS BANKSET		
1238		10,3644	00700 0	NVBUSMSK OCT	700	
12365		10,3645	00704 1	ASTROMSK OCT	704	
1239		10,3646	40030 0	MPERFMSK OCT	40030	BIT 15,5,4, FOR MARK, PERFORM, FLASH
1240		10,3647	34300 0	OCT34300 OCT	34300	
1241		10,3650	40100 1	BITS15+7 OCT	40100	
1242		10,3651	00110 1	BITS7+4 OCT	110	
1243	REP 3 LAST 1441	1067		DSPFLG EQUALS ERANKSAV		
1244	REP 1	1070		MARKFLAG EQUALS MARKERBAN		
1245	REP 6 LAST 1450	1071		SAVERFLAG EQUALS ERANKITEM		
1246		10,3652	02020 1	BITS6+11 OCT	2020	* DONT MOVE
1247		10,3653	01010 1	BITS4+10 OCT	1010	* DONT MOVE
1249		10,3654	00028 0	LOWLOAD DEC	22	
1250		10,3655	77730 0	BUSYMASK OCT	77730	
1252		10,3656	00050 1	CADMASK OCT	50	
1253	REP 7 LAST 1393	7707		PINMASK EQUALS 13,14,15		
1254	REP 2 LAST 1445	10,3216		GOPLAY EQUALS NVDSP		
A1255				PRIOSAVE EQUALS RISAVE		
1256	REP 718 LAST 1450	0157		COPMPAC EQUALS MPAC +3		
1257	REP 719 LAST 1451	0160		TEMPOR2 EQUALS MPAC +4		
1258	REP 720 LAST 1451	0161		OUTHERE EQUALS MPAC +5		
1259	REP 43 LAST 1446	0164		COPINDEX EQUALS LOC		
1260	REP 26 LAST 1152	0163		USERPRIQ EQUALS MODE		

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L DISPLAY INTERFACE ROUTINES

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1261	REF 721 LAST 1451	0162	GENMASK	EQUALS MPAC +6	
1262		10,3657	20144 1	PRI0OCT OCT 20144	PRI0
1263		10,3660	42424 0	MARCOCT OCT 42424	MARK
1264		10,3661	11254 1	OCT 11254	NORM
1265		10,3662	74704 1	IDLESLEEP OCT 74704	
1266		10,3663	67777 1	OCT87777 OCT 67777	
1267	REF 18 LAST 891	5415	LINUS	EQUALS BLANKET	
1268	REF 722 LAST 1452	0154	FACEREG	EQUALS MPAC	
1269	REF 723 LAST 1452	0155	PLAYITEM1	EQUALS MPAC +1	
1270	REF 724 LAST 1452	0157	PLAYITEM3	EQUALS MPAC +3	
1271	REF 725 LAST 1452	0160	PLAYITEM4	EQUALS MPAC +4	
1273		10,3664	40420 0	OCT40420 OCT 40420	
1274	REF 3 LAST 1440	10,3665	02674 0	MAKEGEN GENADR MAKEPLAY	
1275		10,3666	10200 1	OCT10200 OCT 10200	
1276		10,3667	30200 0	V97N00 VN 09700	PASTE FOR V97 OR V99
12761		10,3670	20100 1	OCT20100 OCT 20100	

## L SERVICE ROUTINES

USER&amp; PAGE NO. 1 EO S4

0037			7717	BLOCK 3	
0038	REP 1		6000	SETLOC PPTAG6	
0039			7717	BANK	
0040	REP 1			COUNT 03/FLAG	
0043	REP 233 LAST 1446		7717 54 001 1	UPENT2	WHICH FLAGWORD IS IT
0044	REP 4 LAST 1362		7720 7 4716 1	TS L	SAVE IN L FOR INDEXING
0045	REP 234 LAST 1453		7721 56 001 0	MASK OCT7	OBTAİN THE BIT INFORMATION
0046	REP 3 LAST 1364		7722 7 5630 0	XCH L	PREVENT INTERRUPTS
0047			7723 0 0004 0	INHINT	STORE THE BIT INFORMATION TEMPORARILY
0048	REP 30 LAST 1404		7724 54 081 1	TS ITEMPI	
0049	REP 235 LAST 1453		7725 50 001 0	NDX L	
0050	REP 12 LAST 993		7726 4 0074 0	C8 FLAGWRD0	
0051	REP 31 LAST 1453		7727 7 0081 1	MASK ITEMPI	
0052	REP 236 LAST 1453		7730 50 001 0	NDX L	
0053	REP 13 LAST 1453		7731 28 074 0	ADS FLAGWRD0	
0054			7732 0 0003 1	RELINT	RELEASE INTERRUPT INHIBIT
0055	REP 340 LAST 1449		7733 24 002 0	INCR O	OBTAİN THE CORRECT RETURN ADDRESS
0056	REP 341 LAST 1453		7734 0 0002 0	TC O	RETURN
0059	REP 237 LAST 1453		7735 54 001 1	DOWNTENT2	WHICH FLAGWORD IS IT
0060	REP 5 LAST 1453		7736 7 4716 1	TS L	SAVE IN L FOR INDEXING
0061	REP 238 LAST 1453		7737 56 001 0	MASK OCT7	OBTAİN THE BIT INFORMATION
0062	REP 4 LAST 1453		7740 7 5630 0	XCH L	START TO PROCESS THE INFORMATION
0063			7741 4 0000 0	COM	PREVENT INTERRUPTS
0064			7742 0 0004 0	INHINT	
0065	REP 239 LAST 1453		7743 50 001 0	NDX L	
0066	REP 14 LAST 1453		7744 7 0074 0	MASK FLAGWRD0	
0067	REP 240 LAST 1453		7745 50 001 0	NDX L	
0068	REP 15 LAST 1453		7746 54 074 0	TS FLAGWRD0	
0069			7747 0 0003 1	RELINT	RELEASE INTERRUPT INHIBIT
0070	REP 342 LAST 1453		7750 24 002 0	INCR O	OBTAİN THE CORRECT RETURN ADDRESS
0071	REP 343 LAST 1453		7751 0 0002 0	TC O	RETURN
0072	REP 24 LAST 1444	4716	10,3871	OCT7 EQUALS SEVEN	
0073				BANK 10	

## L SERVICE ROUTINES

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R0074

R0075 UPPFLAG AND DOWNFLAG ARE ENTIRELY GENERAL FLAG SETTING AND CLEARING SUBROUTINES. USING THEM, WHETHER OR  
 R0077 NOT IN INTERRUPT, ONE MAY SET OR CLEAR ANY SINGLE, NAMED BIT IN ANY ERASABLE REGISTER, SUBJECT OF COURSE TO  
 R0079 EBANK SETTING. A NAMEDA BIT, AS THE WORD IS USED HERE, IS ANY BIT WITH A NAME FORMALLY ASSIGNED BY THE YUL  
 R0081 ASSEMBLER.

R0082 AT PRESENT THE ONLY NAMED BITS ARE THOSE IN THE FLAGWORDS. ASSEMBLER CHANGES WILL MAKE IT POSSIBLE TO  
 R0084 NAME ANY BIT IN ERASABLE MEMORY.

R0085 CALLING SEQUENCES ARE AS FOLLOWS:-

		TC	UPFLAG		TC	DOWNSFLAG	
		ADRES	NAME OF FLAG		ADRES	NAME OF FLAG	
R0088 RETURN IS TO THE LOCATION FOLLOWING THE ADDRESS ABOUT .58 MS AFTER THE BTCA.							
R0090 UPON RETURN A CONTAINS THE CURRENT FLAGWORD SETTING.							
0091			5435		BLOCK	02	
0092	REP	5	LAST 1381	4000	SETLOC	PPTAG1	
0093				5435	BANK		
0094	REP	1			COUNT*	SS/FLAG	
0095	REP	344	LAST 1453	5435 3 0002 0	UPFLAG	CA Q	
0096	REP	1		5436 0 5453 0		TC DEBIT	
0097				5437 4 0000 0		COM	+ (15 - BIT)
0098				5440 0 0006 1		EXTEND	
0099	REP	16	LAST 1101	5441 04 001 1		ROR LOCHAN	SET BIT
0100	REP	32	LAST 1453	5442 50 061 0	COMFLAG	INDEX 1TEMP1	
0101	REP	16	LAST 1453	5443 54 074 0		TS FLAGWRD0	
0102	REP	5	LAST 1379	5444 22 063 1		LXCH 1TEMP3	
0103				5445 0 0003 1		REPLINT	
0104	REP	241	LAST 1453	5446 0 0001 0		TC L	
0105	REP	345	LAST 1454	5447 3 0002 0	DOWNSFLAG	CA Q	
0106	REP	2	LAST 1454	5450 0 5453 0		TC DEB1T	
0107	REP	242	LAST 1454	5451 7 0001 1		MASK L	RESET BIT
0108	REP	1		5452 1 5442 1		TCF COMFLAG	
0109	REP	174	LAST 1449	5453 8 4712 1	DEBIT	AD ONE	GET DE BITS
0110				5454 0 0004 0		INHINT	
0111	REP	6	LAST 1454	5455 54 063 0		TS 1TEMP3	
0112	REP	4	LAST 1167	5456 3 4721 1		CA LOW4	DEC15
0113	REP	33	LAST 1454	5457 54 061 1		TS 1TEMP1	
0114	REP	7	LAST 1454	5460 50 063 1		INDEX 1TEMP3	
0115				5461 2 7777 0		CA 0 -1	
0116	REP	243	LAST 1454	5462 54 001 1		TS L	
0117	REP	283	LAST 1449	5463 3 4714 1		CA ZERO	

## L SERVICE ROUTINES

0118			5464 0 0006 1	EXTEND	
0119	REP 34	LAST 1454	5465 10 081 1	DV	IITEMP1
0120	REP 35	LAST 1455	5466 52 082 1	DXCH	IITEMP1
0121	REP 36	LAST 1455	5467 50 081 0	INDEX	IITEMP1
0122	REP 17	LAST 1454	5470 3 0074 1	CA	FLAGWRD0
0123	REP 244	LAST 1454	5471 54 001 1	TS	L
0124	REP 22	LAST 1403	5472 50 082 0	INDEX	IITEMP2
0125	REP 56	LAST 1434	5473 4 4674 1	CS	BIT15
0126	REP 346	LAST 1454	5474 0 0002 0	TC	- (15 - BIT)

A = FLAGWRD, L = -(15 - BIT)

CURRENT STATE

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L SERVICES ROUTINES

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P0127 DELAYJOB- A GENERAL ROUTINE TO DELAY A JOB A SPECIFIC AMOUNT OF TIME BEFORE PICKING UP AGAIN.

R0129 ENTRANCE REQUIREMENTS...

A0130

CAP DT

DELAY JOB FOR DT CENTISECS

A0131

TC BANKCALL

A0132

CADR DELAYJOB

0133 06,3651  
0134 REP 1 00,2000  
0135 00,3732

BANK 06  
SETLOC DELAYJOB  
BANK

R0136 THIS MUST REMAIN IN BANK 0 \*\*\*\*\*

0137 REP 1 COUNT 00/DLAY

0138 00,3732 0 0004 0 DELAYJOB INHINT  
0139 REP 347 LAST 1455 00,3733 54 002 1 TS Q STORE DELAY DT IN Q FOR DLY -1 IN  
0140 REP 1 00,3734 3 6214 0 CAP DELAYNUM WAITLIST  
0141 REP 37 LAST 1405 00,3735 54 070 1 DELLOOP TS RUPTREG1  
0142 REP 416 LAST 1450 00,3736 50 000 1 INDEX A  
0143 REP 5 LAST 166 00,3737 3 1141 1 CA DELAYLOC IS THIS DELAYLOC AVAILABLE  
0144 00,3740 0 0006 1 EXTEND  
0145 REP 1 00,3741 1 3746 0 BZP OK2DELAY YES  
0146 REP 38 LAST 1456 00,3742 10 070 1 CCS RUPTREG1  
0147 REP 1 00,3743 1 3735 1 TOP DELLOOP NO, TRY NEXT DELAYLOC  
0148 REP 7 LAST 1199 00,3744 0 5604 0 TC BAILOUT  
0149 00,3745 0 1104 0 OCT 1104 NO AVAILABLE LOC'S AVAILABLE.  
0150 REP 1 00,3746 3 3766 0 OK2DELAY CA TOSLEEP  
0151 REP 5 LAST 1193 00,3747 54 061 1 TS WAITEEXIT SET WAITLIST IMMEDIATE RETURN  
0152 REP 30 LAST 1180 00,3750 3 0004 0 CA PBANK  
0153 REP 39 LAST 1456 00,3751 6 0070 0 AD RUPTREG1  
0154 REP 245 LAST 1455 00,3752 54 001 1 TS L STORE BRANK FOR TASK CALL  
0155 REP 1 00,3753 3 3767 1 CAP WAKECAD  
0156 REP 2 LAST 1193 00,3754 1 5146 0 TCP DLY2 -1 STORE CADR FOR TASK CALL  
DLY IS IN WAITLIST ROUTINE  
0157 REP 7 LAST 1441 00,3755 0 4604 1 TCGETCAD TC MAKECADR GET CALLERS PCADR  
0158 REP 40 LAST 1456 00,3756 50 070 0 INDEX RUPTREG1  
0159 REP 6 LAST 1456 00,3757 55<141 0 TS DELAYLOC SAVE DELAY CADRS  
0160 REP 8 LAST 1442 00,3760 0 5070 0 TC JOBSLEEP  
0161 REP 284 LAST 1454 00,3761 3 4714 1 WAKER CAP ZERO  
0162 REP 36 LAST 1440 00,3762 50 006 1 INDEX BRANK  
0163 REP 7 LAST 1456 00,3763 57<141 1 XOH DELAYLOC MAKE DELAYLOC AVAILABLE

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L SERVICE ROUTINES

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0164	REP	13	LAST	1443	00,3764	0 5074	1	TC	JOBWAKE
0165	REP	73	LAST	1407	00,3765	0 5213	1	TC	TASKOVER
0166	REP	1			00,3766	03753	0	TCSLEEP	GENADR TCGETCAD -2
0167	REP	1			00,3767	03761	1	WAKECAD	GENADR WAKER

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L SERVICE ROUTINES

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R0169 GENTRAN, A BLOCK TRANSFER ROUTINE.

R0170 WRITTEN BY D. EYLES

R0171 MOD 1 BY KERNAN

UTILITY REV 17 11/18/67

R0172 MOD 2 BY SCHULENBERG (REMOVE RELINT) SKIPPER REV 4 2/28/68

R0173 THIS ROUTINE IS USEFULL FOR TRANSFERRING N CONSECUTIVE ERASABLE OR FIXED QUANTITIES TO SOME OTHER N CONSECUTIVE ERASABLE LOCATIONS. IF BOTH BLOCKS OF DATA ARE IN SWITCHABLE EBANKS, THEY MUST BE IN THE SAME ONE.

R0177 GENTRAN IS CALLABLE IN A JOB AS WELL AS A RPUT. THE CALLING SEQUENCE IS:

A0179	I	CA	N-1	1 OF QUANTITIES MINUS ONE.
A0180	I +1	TC	GENTRAN	IN FIXED-FIXED.
A0181	I +2	ADRES	L	STARTING ADRES OF DATA TO BE MOVED.
A0182	I +3	ADRES	M	STARTING ADRES OF DUPLICATION BLOCK.
A0183	I +4			RETURNS HERE.

R0184 GENTRAN TAKES 25 MCTs (300 MICROSECONDS) PER ITEM + 5 MCTs (60 MICS) FOR ENTERING AND EXITING.

R0186 A, L AND ITEMP1 ARE NOT PRESERVED.

0187		5475		BLOCK 02
0188	REP 2 LAST 1433	4000		SETLOC PFDAG4
0189		5475		BANK
0190	REP 37 LAST 1455	0061		EBANK= ITEMP1
0191	REP 1			COUNT* \$\$/TRAN
0192		5475 0 0004 0	GENTRAN	INHINT
0193	REP 38 LAST 1458	5476 54 081 1		TS ITEMP1
0194	REP 348 LAST 1456	5477 50 002 0		INDEX 0
0195		5500 6 0000 1		AD 0
0196	REP 419 LAST 1456	5501 50 000 1		INDEX A
0197		5502 3 0000 1		CA 0
0198	REP 248 LAST 1458	5503 54 001 1		TS L
0199	REP 39 LAST 1458	5504 3 0081 0		CA ITEMP1
0200	REP 349 LAST 1458	5505 50 002 0		INDEX 0
0201		5508 6 0001 0		AD 1
0202	REP 420 LAST 1456	5507 50 000 1		INDEX A
0203		5510 22 000 1		LXCH 0
0204	REP 40 LAST 1456	5511 10 081 1		COS ITEMP1
0205	REP 13 LAST 785	5512 1 5478 0		TOP GENTRAN +1
0207	REP 4 LAST 1372	5513 1 8710 0		TOP 0+2
				RETURN TO CALLER.

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L SERVICE ROUTINES

P0208 B5OPP ZERO BIT 5 OF EXTVBACT, WHICH IS SET BY TESTVACT.

R0209 MAY BE USED AS NEEDED BY ANY EXTENDED VERB WHICH HAS DONE TESTVACT

0211 REP 1 COUNT\* \$S/EXTVB

0212 REP 49 LAST 1446	5514 4 4706 0	B5OPP	CS	BITS
0213 REP 21 LAST 1433	5515 7 1044 1		MASK	EXTVBACT
0214 REP 22 LAST 1459	5516 55<044 1		TS	EXTVBACT
0215 REP 120 LAST 1451	5517 0 5112 0		TC	ENDOPJOB

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L SERVICE ROUTINES

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P0216 SUBROUTINES TO TURN OFF AND TURN ON TRACKER FAIL LIGHT.

0217	REP 1	5520 0 0004 0 TRFAILOF INHINT	CS OCT40200	TURN OFF TRACKER LIGHT
0219	REP 46 LAST 1396	5521 4 7704 1 MASK DSPTAB +11D		
0220	REP 57 LAST 1455	5522 7 1038 1 AD BIT15		
0221	REP 47 LAST 1480	5523 6 4674 0 TS DSPTAB +11D		
02215	REP 37 LAST 381	5524 55<038 1 CS OPTIMODES		TO INSURE THAT OCDU FAIL WILL GO ON
02216	REP 55 LAST 1378	5525 4 1331 0 MASK BIT7		AGAIN IF IT WAS ON IN ADDITION TO
02217	REP 38 LAST 1480	5526 7 4704 1 ADS OPTIMODES		TRACKER FAIL.
0222		5527 27<331 0		
0223	REP 350 LAST 1458	5530 0 0003 1 REQ RELINT		
		5531 0 0002 0 TC Q		
0224		5532 0 0004 0 TRFAILON INHINT		
0225	REP 48 LAST 1480	5533 4 1038 1 CS DSPTAB +11D	TURN ON	
0226	REP 2 LAST 1480	5534 7 7704 1 MASK OCT40200		
0227	REP 49 LAST 1480	5535 27<038 1 ADS DSPTAB +11D		
0228	REP 1	5536 1 5530 0 TCP REQ		

## L ALARM AND ABORT

R0001 THE FOLLOWING SUBROUTINE MAY BE CALLED TO DISPLAY A NON-ABORTIVE ALARM CONDITION. IT MAY BE CALLED  
R0002 EITHER IN INTERRUPT OR UNDER EXECUTIVE CONTROL.

00004 : CALLING SEQUENCE IS AS FOLLOWS<sup>1</sup>

R0005 TC ALARM  
R0006 OCT AAANN ALARM NO. NN IN GENERAL AREA AAA  
R0007 (RETURNS HERE)

0006 5537 BLOCK 02  
0009 REP 1 SETLOC PPTAG7  
0010 . 4000 BANK  
0011 . 5537

0011 REP 6 LAST 362 0375 EBANK= FAILREQ  
COUNT 02/ALAR

B0013 ALARM TURNS ON THE PROGRAM ALARM LIGHT, BUT DOES NOT DISPLAY.

8014 5537 0 0004 0 ALARM INHINT

0015	REF 351	LAST 1460	5540 3 0002 0		CA	Q	
0016	REF 4	LAST 1364	5541 55=363 1	ALARM2	TS	ALMCADR	
0017	REF 352	LAST 1461	5542 50 002 0		INDEX	Q	
0018			5543 3 0000 1		CA	0	
0019	REF 247	LAST 1456	5544 54 001 1	BORTENT	TS	L	
0020	REF 37	LAST 1456	5545 3 0006 1	PRICENT	CA	BBANK	
00202			5546 0 0006 1	+1	EXTEND		
00204	REF 26	LAST 1440	5547 04 007 1		ROR	SUPERBNK	ADD SUPER BITS.
0021	REF 5	LAST 1461	5550 55=364 0		TS	ALMCADR +1	
0022	REF 353	LAST 1461	5551 3 0002 0	LARMENT	CA	Q	STORE RETURN FOR ALARM
0023	REF 41	LAST 1456	5552 54 061 1		TS	ITEMP1	
0024	REF 9	LAST 1461	5553 10 375 1	CHKFAIL1	CCS	FAILREG	
0025	REF 1		5554 1 5557 1		TCP	CHKFAIL2	IS ANYTHING IN FAILREG
0026	REF 10	LAST 1461	5555 22 375 0		LXCH	FAILREG	YES TRY NEXT REG
0027	REF 1		5556 1 5571 0		TCP	PROGLARM	TURN ALARM LIGHT ON FOR FIRST ALARM
0028	REF 11	LAST 1461	5557 10 376 1	CHKFAIL2	CCS	FAILREG +1	
0029	REF 1		5560 1 5563 0		TCP	FAIL3	
0030	REF 12	LAST 1461	5561 22 376 0		LXCH	FAILREG +1	
0031	REF 1		5562 1 5574 0		TCP	MULTEXIT	
0032	REF 13	LAST 1461	5563 3 0377 1	FAIL3	CA	FAILREG +2	
0033	REF 37	LAST 1201	5564 7 4672 1		MASK	POSMAX	
0034	REF 421	LAST 1456	5565 10 000 0		CCS	A	
0035	REF 1		5566 1 5600 0		TCP	MULTIFAIL	
0036	REF 14	LAST 1461	5567 22 377 1		LXCH	FAILREG +2	

## L ALARM AND ABORT

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0037	REP 2 LAST 1461	5570 1 5574 0	TCP	MULTEXIT		
0038	REP 50 LAST 1460	5571 4 1036 1	PRIOLARM CS	DSPTAB +11D		
0039	REP 2 LAST 1437	5572 7 5812 0		MASK	OCT40400	
0040	REP 51 LAST 1462	5573 27 <del>a</del> 036 1		ADS	DSPTAB +11D	
0041	REP 42 LAST 1461	5574 56 081 0	MULTEXIT XCH	I TEMP1	OBTAİN RETURN ADDRESS IN A	
0042		5575 0 0003 1		RELINT		
0043	REP 422 LAST 1461	5576 50 000 1		INDEX A		
0044		5577 0 0001 0		TC	1	
0045	REP 248 LAST 1461	5600 3 0001 0	MULTFAIL CA	L		
0046	REP 58 LAST 1460	5601 6 4874 0		AD	BIT15	
0047	REP 15 LAST 1461	5602 54 377 0		TS	FAILREG +2	
0048	REP 3 LAST 1462	5603 1 5574 0	TCP	MULTEXIT		
R0049	PRIOLARM DISPLAYS V05N09 VIA PRIODSPR WITH 3 RETURNS TO THE USER FROM THE ASTRONAUT AT CALL LOC +1,+2,+3 AND AN IMMEDIATE RETURN TO THE USER AT CALL LOC +4. EXAMPLE FOLLOWS,					
A0052		CAF	OCTDX	ALARM CODE		
A0053		TC	BANKCALL			
A0054		CADR	PRIOLARM			
A0055		...	...			
A0056		...	...			
A0057		...	...			
A0058		TC	PHASING	ASTRONAUT RETURN		
A0059		OCT	X.1	IMMEDIATE RETURN TO USER. RESTART PHASE CHANGE FOR PRIO DISPLAY		
0060		10,3671		BANK	10	
0061	REP 2 LAST 1433	10,2000		SETLOC	DISPLAYS	
0062		10,3671		BANK		
0063	REP 2 LAST 1433 TO 1453'	650 650*	COUNT	10/DSPLA		
0064		10,3671 0 0004 0	PRIOLARM	INHINT	* * * KEEP IN DISPLAY ROUTINES BANK	
0065	REP 249 LAST 1462	10,3672 54 001 1		TS L	SAVE ALARM CODE	
0066	REP 24 LAST 1410	10,3673 3 0133 0	CA	BUF2	2 CADR OF PRIOLARM USER	
0067	REP 6 LAST 1461	10,3674 55 <del>a</del> 363 1	TS	ALMCADR		
0068	REP 25 LAST 1462	10,3675 3 0134 1	CA	BUF2 +1		
0069	REP 1	10,3676 0 5546 0	TC	PRIOPENT +1	* LEAVE L ALONE	
0071		10,3677 77467 1 -2SEC	DEC	-200	* * * DONT MOVE	
0072	REP 5 LAST 759	10,3700 3 4743 0	CAP	V05N09		
0073	REP 1	10,3701 1 2632 0	TCF	PRIODSPR		
0074		5604	BLOCK	02		
0075	REP 2 LAST 1461	4000	SETLOC	FPTAG7		
0076		5604	BANK			

## L ALARM AND ABORT

	REP	LAST	1461 TO 1462*	37	37*	COUNT	02/ALARM
0077	REP	2	LAST 1461 TO 1462*	37	37*	COUNT	02/ALARM
0076				5604	0 0004 0	BAILOUT	INHINT
0079	REP	354	LAST 1461	5605	3 0002 0	CA	Q
0080	REP	7	LAST 1462	5606	55<363 1	TS	ALMCADR
0081	REP	355	LAST 1463	5607	50 002 0	INDEX	Q
0082				5610	3 0000 1	CAP	0
0083	REP	1		5611	0 5544 1	TC	BORTENT
0084				5612	40400 1	OCT40400	OCT 40400
00845				5613	0 0004 0	INHINT	
0085	REP	78	LAST 1447	5614	3 4711 1	WHIMPER	CA TWO
00851	REP	17	LAST 1372	5615	6 0005 1	AD	Z
00852	REP	1		5616	54 017 0	TS	BRUPT
00853				5617	5 0017 1	RESUME	
00854	REP	64	LAST 1433	5620	0 4574 0	TC	POSTJUMP
00855	REP	3	LAST 254	5621	12841 1	CADR	ENEMA
008552				5622	0 0004 0	POODOO	INHINT
008553	REP	358	LAST 1483	5623	3 0002 0	CA	Q
008554	REP	8	LAST 1463	5624	55<363 1	ABORT2	TS ALMCADR
008555	REP	357	LAST 1463	5625	50 002 0	INDEX	0
008556				5626	3 0000 1	CAP	0
008557	REP	2	LAST 1463	5627	0 5544 1	TC	BORTENT
008558				5630	77770 1	OCT77770	OCT 77770
00856	REP	1		5631	3 4705 1	CA	V37FLBIT
008561	REP	24	LAST 1418	5632	7 0103 1	MASK	FLAGWRD7
008562	REP	423	LAST 1482	5633	10 000 0	CCS	A
008563	REP	1		5634	0 5813 0	TC	WHIMPER -1
00857	REP	248	LAST 1414	5635	0 4555 0	TC	BANKCALL
00858	REP	2	LAST 180	5636	12474 0	CADR	MR.KLEAN
00859	REP	2	LAST 1463	5637	0 5814 1	TC	WHIMPER
0086				5640	0 0004 0	CCSHOLE	INHINT
0087	REP	358	LAST 1463	5641	3 0002 0	CA	Q
0089	REP	1		5642	0 5824 1	TC	ABORT2
0090				5643	01103 1	OCT1103	OCT 1103
0091				5644	0 0004 0	CURTAINS	INHINT
0092	REP	359	LAST 1483	5645	3 0002 0	CA	Q
0094	REP	2	LAST 1364	5648	0 5541 1	TC	ALARM2
0095				5647	00217 0	OCT217	OCT 00217
0096	REP	9	LAST 1463	5650	0 1383 0	TC	ALMCADR
0099	REP	121	LAST 1459	5112		DOALARM	EQUALS ENDOFJOB
R0100						CAP	(ALARM)
						TC	VARALARM
A0101							
A0102							

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L ALARM AND ABORT

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R0103 VARALARM TURNS ON PROGRAM ALARM LIGHT BUT DOES NOT DISPLAY  
0104 5651 0 0004 0 VARALARM INHINT

0105 REP 250 LAST 1462 5652 54 001 1 TS L SAVE USERS ALARM CODE

0106 REP 380 LAST 1463 5653 3 0002 0 CA Q SAVE USERS Q  
0107 REP 10 LAST 1463 5654 55-383 1 TS ALMCADR

0108 REP 2 LAST 1462 5655 0 5545 0 TC PRIORIT  
0109 5656 00014 1 OCT14 OCT 14 DONT MOVE

0110 REP 11 LAST 1464 5657 0 1363 0 TC ALMCADR RETURN TO USER

0111 REP 8 LAST 1458 5604 ABORT EQUALS BAILOUT \*\*\* TEMPORARY UNTIL ABORT CALLS OUT

L UPDATE PROGRAM

R0001 PROGRAM NAME' P27  
 R0002 WRITTEN BY' KILROY/ DE WOLF

R0003 MOD NO' 6  
 R0004 MOD BY' KILROY  
 R0005 DATE' 01DEC67

R0006 LOG SECTION' UPDATE PROGRAM.

R0007 FUNCT. DESC'R P27 (THE UPDATE PROGRAM) PROCESSES COMMANDS AND DATA INSERTIONS REQUESTED BY THE GROUND VIA UPLINK.  
 R0008 THE P27 PROGRAM WILL ACCEPT UPDATES  
 R0009 ONLY DURING P00 FOR THE LM, AND ONLY DURING P00,  
 R0010 P02, AND FRESH START FOR THE CSM  
 R0011

R0012 CALLING SEQ' PROGRAM IS INITIATED BY UPLINK ENTRY OF VERBS 70, 71, 72 AND 73.

R0014 SUBROUTINES' TESTACT, NEWMODEX, NEWMODEX.+3, GOODSP, BANKCALL, FINDVAC, INTPRET, INTSTALL, TPAGREE,  
 R0016 INTWAKEU, ENDEXT, POSTJUMP, FALTON, NEWPHASE, PHASCHNG

R0017 NORMAL EXIT' TC ENDEXT

R0018 ALARM/ABORT' TC FALTON FOLLOWED BY TC ENDEXT

R0019 RESTARTS' P27 IS RESTART PROTECTED IN TWO WAYS...  
 1. PRIOR TO VERIFLAG INVERSION(WHICH IS CAUSED BY THE GROUND/ASTRONAUT'S VERIFICATION OF UPDATE DATA BY SENDING A V33E WHEN V21N02 IS FLASHING)---  
 R0020 NO PROTECTION EXCEPT PRE-P27 MODE IS RESTORED, COAST + ALIGN DOWNLIST IS SELECTED AND UPLINK R0022 ACTIVITY LIGHT IS TURNED OFF.(JUST AS IF A V34E WAS SENT DURING P27 DATA LOADS).  
 R0023 V70,V71,V72 OR V73 WILL HAVE TO BE COMPLETELY RESENT BY USER.  
 R0025 2. AFTER VERIFLAG INVERSION(WHEN UPDATE OF THE SPECIFIED ERASABLES IS BEING PERFORMED)---  
 R0027 PROTECTED AGAINST RESTARTS.  
 R0029 R0031

R0032 DEBRIS' UPBUFF (20D) TEMP STORAGE FOR ADDRESSES AND CONTENTS.  
 R0033 UPVERB (1) VERB NUMBER MINUS 70D (E.G. FOR V72, UPVERB = 72D - 70D = 2)  
 R0035 UPOLDMOD (1) FOR MAJOR MODE INTERRUPTED BY P27.  
 R0036 COMPNUMB (1) TOTAL NUMBER OF COMPONENTS TO BE TRANSMITTED.  
 R0038 UPCOUNT (1) ACTUAL NUMBER OF COMPONENTS RECEIVED.  
 R0039 UPTEMP (1) SCRATCH, BUT USUALLY CONTAINS COMPONENT NUMBER TO BE CHANGED DURING VERIFY CYCLE  
 R0041 INPUT'

R0042 ENTRY' DESCRIPTION

R0043 V70E30000E30000E (LIPOFF TIME INCREMENT) DOUBLE PRECISION OCTAL TIME INCREMENT, XXXXX XXXXX,  
 R0044 IS ADDED TO TEPHEM, SUBTRACTED FROM AGC CLOCK(TIME2,TIME1), SUBTRACTED FROM CSM STATE  
 R0045 VECTOR TIME(TETCSM) AND SUBTRACTED FROM LEM STATE VECTOR TIME(TETLEM).  
 R0046 THE DP OCTAL TIME INCREMENT IS SCALED AT 2<sup>(28)</sup>.  
 R0049

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L UPDATE PROGRAM  
R0050 V71BII~~AAAAAB~~ (CONTIGUOUS BLOCK UPDATE) II-2 OCTAL COMPONENTS, X000X, ARE LOADED INTO ERASABLE STARTING AT ECADR, AAAA.  
R0051 X000X~~E~~ IT IS GE. 3 AND LE. 20D.,  
R0052 X000X~~E~~ AND (AAAA + II - 3) DOES NOT PRODUCE AN ADDRESS IN THE  
R0053 R0054 S NEXT BANK  
R0055 SCALING IS SAME AS INTERNAL REGISTERS.  
R0056 V72BII~~E~~ (SCATTER UPDATE) (II-1)/2 OCTAL COMPONENTS, X000X, ARE LOADED INTO ERASABLE LOCATIONS, AAAA.  
R0057 AAAAB~~X000X~~E~~~~ II IS GE. 3 AND LE. 19D, AND MUST BE ODD.  
R0058 AAAAB~~X000X~~E~~~~ SCALING IS SAME AS INTERNAL REGISTERS.  
R0059 R0060 R0061 V73B~~X000X~~E~~X0000E~~ (OCTAL CLOCK INCREMENT) DOUBLE PRECISION OCTAL TIME INCREMENT X000X X000X, IS ADDED TO THE AGC CLOCK, IN CENTISECONDS SCALED AT (2)<sup>28</sup>. THIS LOAD IS THE OCTAL EQUIVALENT OF V55.  
R0062 R0063 R0064 R0065 OUTPUT' IN ADDITION TO THE ABOVE REGISTER LOADS, ALL UPDATES COMPLEMENT BIT3 OF FLAGWORD7.  
R0066 R0067 ADDITIONAL NOTES' VERB 71, JUST DEFINED ABOVE WILL BE USED TO PERFORM BUT NOT LIMITED TO THE FOLLOWING UPDATES--  
R0068 1. CSM/LM STATE VECTOR UPDATE  
R0069 2. REPSSMAT UPDATE  
R0070 THE FOLLOWING COMMENTS DELINEATE EACH SPECIAL UPDATE----  
R0071 1. CSM/LM STATE VECTOR UPDATE(ALL DATA ENTRIES IN OCTAL)  
R0072 R0073 R0074 ENTRIES' DATA DEFINITION' SCALE FACTORS'  
R0075 V71B CONTIGUOUS BLOCK UPDATE VERB  
R0076 21B NUMBER OF COMPONENTS FOR STATE VECTOR UPDATE  
R0077 AAAAB ECADR OF UPSVFLAG.  
R0078 X000X~~E~~ STATE VECTOR IDENTIFIER' 00001 FOR CSM, 77776 FOR LEM - EARTH SPHERE OF INFLUENCE SCALING  
R0079 00002 FOR CSM, 77775 FOR LEM - LUNAR SPHERE OF INFLUENCE SCALING  
R0080 X000X~~E~~0000X~~E~~ X POSITION  
R0081 X000X~~E~~0000X~~E~~ Y POSITION  
R0082 X000X~~E~~0000X~~E~~ Z POSITION  
R0083 X000X~~E~~0000X~~E~~ X VELOCITY  
R0084 X000X~~E~~0000X~~E~~ Y VELOCITY  
R0085 X000X~~E~~0000X~~E~~ Z VELOCITY  
R0086 X000X~~E~~0000X~~E~~ TIME FROM AGC CLOCK ZERO  
R0087 V33B VERB 33 TO SIGNAL THAT THE STATE VECTOR IS READY TO BE STORED.  
R0088 R0089 2. REPSSMAT(ALL DATA ENTRIES IN OCTAL)  
R0090 ENTRIES' DATA DEFINITIONS' SCALE FACTORS'

## L UPDATE PROGRAM

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R0147	V71E	CONTINUOUS BLOCK UPDATE VERB										
R0148	24E	NUMBER OF COMPONENTS FOR REPSMMAT UPDATE										
R0150	AAAAE	BCADR OF «REPSMMAT»										
R0152	X0000E90000E	ROW 1	COLUMN 1								2(-1)	
R0154	X0000E90000E	ROW 1	COLUMN 2								2(-1)	
R0156	X0000E90000E	ROW 1	COLUMN 3								2(-1)	
R0158	X0000E90000E	ROW 2	COLUMN 1								2(-1)	
R0160	X0000E90000E	ROW 2	COLUMN 2								2(-1)	
R0162	X0000E90000E	ROW 2	COLUMN 3								2(-1)	
R0164	X0000E90000E	ROW 3	COLUMN 1								2(-1)	
R0166	X0000E90000E	ROW 3	COLUMN 2								2(-1)	
R0168	X0000E90000E	ROW 3	COLUMN 3								2(-1)	
R0170	V33E	VERB 33 TO SIGNAL THAT REPSMMAT IS READY TO BE STORED.										
0171		BANK 07										
0172	REP 4 LAST 538	43,2000	SETLOC EXTERBS									
0173		43,3722	BANK									
0174	REP 13 LAST 741	E3,1706	EBANK= TEPHIM									
0175	REP 1	COUNT* SS/P27										
0176	REP 1	43,3722	3 4714 1	V70UPDAT	CAF	UP70						COMES HERE ON V70B
0177	REP 2 LAST 230	43,3723	1 3731 0	TCP	V73UPDAT	+1						COMES HERE ON V71E
0178	REP 1	43,3724	3 4712 1	V71UPDAT	CAF	UP71						COMES HERE ON V72E
0179	REP 3 LAST 1467	43,3725	1 3731 0	TCP	V73UPDAT	+1						COMES HERE ON V73E
0180	REP 1	43,3726	3 4711 1	V72UPDAT	CAF	UP72						COMES HERE ON V72B
0181	REP 4 LAST 1467	43,3727	1 3731 0	TCP	V73UPDAT	+1						COMES HERE ON V73B
0182	REP 1	43,3730	3 6214 0	V73UPDAT	CAF	UP73						SAVE UPVERB UNTIL IT'S OK TO ENTER P27
0183	REP 1	43,3731	54 331 1	+1	TS	UPVERBSV						GRAB DISPLAY IF AVAILABLE, OTHERWISE TURN+OPERATOR ERROR* ON AND TERMINATEJOB
0184	REP 18 LAST 261	43,3732	0 2076 1	TC	TESTXACT							A0185
0186	REP 16 LAST 1372	43,3733	3 1011 0	CA	MODREG							CHECK IP UPDATE ALLOWED
0187		43,3734	0 0006 1	EXTEND								FIRST CHECK FOR MODREG = +0, -0
0188		43,3735	1 3737 0	BZF	+2							(+0 = P00, -0 = FRESH START)
0189	REP 1	43,3736	0 3747 0	TC	OKMDMORE							NOW CHECK FOR PROGRAM WHICH CAN BE
A0190												INTERRUPTED BY P27.
0191	REP 19 LAST 1467	43,3737	31<011 0	CAE	MODREG							UPDATE ALLOWED.
0192	REP 2 LAST 70	43,3740	54 301 1	TS	UPOLDMOD							SAVE CURRENT MAJOR MODE

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L	UPDATE PROGRAM						USER#S PAGE NO. 4 E3 84
0193	REP 2 LAST 1467	43,3741	30 331 0	CAB	UPVERBSV		SET UPVERB TO INDICATE TO P27 WHICH EXTENDED VERB CALLED IT.
0194	REP 2 LAST 70	43,3742	54 302 1	TS	UPVERB		
0195	REP 175 LAST 1454	43,3743	3 4712 1	CAP	ONE		
0196	REP 2 LAST 70	43,3744	54 303 0	TS	UPCOUNT		INITIALIZE UPCOUNT TO 1
0197	REP 65 LAST 1463	43,3745	0 4574 0	TC	POSTJUMP		LEAVE EXTENDED VERB BANK AND GO TO UPDATE PROGRAM(P27) BANK.
0198	REP 1	43,3746	57364 1	CADR	UPPART2		
0199	REP 16 LAST 1417	43,3747	4 0101 0	0XMDMORE	CS		
0200	REP 33 LAST 1444	43,3750	7 4703 0	MASK	BIT8		
0201	REP 424 LAST 1463	43,3751	10 000 0	CCS	A		CHECK IF COMPUTER IS LGC IS COMPUTER LGC OR AGC
0202	REP 1	43,3752	1 3760 1	UPERLEM	TCP		ERROR- IT'S THE LEM + MODE IS NOT POO.
0203	REP 79 LAST 1463	43,3753	4 4711 0	CS	TWO		
0204	REP 20 LAST 1467	43,3754	7 1011 1	MASK	MODREG		
0205	REP 425 LAST 1466	43,3755	10 000 0	CCS	A		
0206	REP 2 LAST 1466	43,3756	1 3760 1	UPERCMC	TCP		ERROR- IT'S THE CMC AND MODE IS NOT POO OR PO2.
A0207	REP 361 LAST 1464	43,3757	0 0002 0	TC	Q		ALLOW UPDATE TO PROCEED
0208	REP 66 LAST 1466	43,3760	0 4574 0	UPERROR	TC	POSTJUMP	TURN ON «OPERATOR ERROR» LIGHT
0210	REP 1	43,3761	57745 0	CADR	UPSRROUT	+2	GO TO COMMON UPDATE PROGRAM EXIT
0211	REP 285 LAST 1458	4714		UP70	EQUALS ZERO		
0212	REP 176 LAST 1466	4712		UP71	EQUALS ONE		
0213	REP 80 LAST 1466	4711		UP72	EQUALS TWO		
0214	REP 53 LAST 1450	6214		UP73	EQUALS THREE		
0215		04,3650			BANK 04		
0216	REP 2 LAST 1300	27,2000			SETLOC UPDATE2		
0217		27,3364			BANK		
0218	REP 1				COUNT* \$\$/P27		
0219		27,3364		UPPART2	EQUALS		UPDATE PROGRAM - PART 2
0220	REP 102 LAST 1414	27,3364	0 5301 0	TC	PHASING		SET RESTART GROUP 6 TO RESTORE OLD MODE
0221		27,3365	07026 1	OCT	07026		AND DOWNLIST AND EXIT IF RESTART OCCURS.
0222		27,3366	30000 1	OCT	30000		PRIORITY SAME AS CHRPRI0
0223	REP 7 LAST 173	0304		FBANK=	UPBUFP		
0224	REP 1	27,3367	03675 0	2CADR	UPOUT +1		
0224	REP 1	27,3370	56100 0				
0225	REP 177 LAST 1466	27,3371	3 4712 1	CAP	ONE		
0226	REP 7 LAST 1067	27,3372	54 332 1	TS	DNLSTCOD		DOWNLIST
0227	REP 13 LAST 754	27,3373	0 5243 1	TC	NEWMODEX		SET MAJOR MODE = 27
0228		27,3374	00033 1	DEC	27		

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## L UPDATE PROGRAM

						INDEX	UPVERB	
0229	REP	3	LAST 1466	27,3375	50 302 0		TCP	+1
0230				27,3376	1 3377 0		TCP	+3
0231				27,3377	1 3402 0		TCP	CHWELL1
0232	REP	1		27,3400	1 3405 1		TCP	CHWELL1
0233	REP	2	LAST 1469	27,3401	1 3405 1		CA	TWO
0234	REP	81	LAST 1468	27,3402	3 4711 1		TS	COMPNUMB
0235	REP	4	LAST 173	27,3403	54 300 0		TCP	CHWELL2
0236	REP	1		27,3404	1 3430 1			
0237	REP	1		27,3405	3 3500 1	CHWELL1	CAP	ADUPBUFP
0238	REP	726	LAST 1452	27,3406	54 158 1		TS	MPAC +2
0239	REP	1		27,3407	3 3501 0	+2	CAP	UPLOADNV
0240	REP	249	LAST 1463	27,3410	0 4555 0		TC	BANKCALL
0241	REP	13	LAST 623	27,3411	20465 1		CADR	GODSPF
0242	REP	1		27,3412	1 3675 1		TCP	UPOUT4
0243	REP	3	LAST 1469	27,3413	1 3407 0		TCP	CHWELL1 +2
0244	REP	1		27,3414	0 3471 0		TC	CK4V32
0245	REP	46	LAST 1383	27,3415	4 4711 0		CS	BIT2
0246	REP	6	LAST 1466	27,3416	6 0304 0		AD	UPBUFP
0247				27,3417	0 0006 1		EXTEND	
0248	REP	4	LAST 1469	27,3420	6 3407 1		BZMP	CHWELL1 +2
0249	REP	9	LAST 1469	27,3421	4 0304 1		CS	UPBUFP
0250	REP	1		27,3422	6 4376 1		AD	UP21
0251				27,3423	0 0006 1		EXTEND	
0252	REP	5	LAST 1469	27,3424	6 3407 1		BZMP	CHWELL1 +2
0253	REP	10	LAST 1469	27,3425	30 304 0		CAB	UPBUFP
0254	REP	5	LAST 1469	27,3426	54 300 0		TS	COMPNUMB
0257								SAVE II IN COMPNUMB
02571	REP	3	LAST 1466	27,3427	24 303 1		INCR	UPCOUNT
0258	REP	1		27,3430	3 3645 0	CHWELL2	CAP	ADUPBPM1
0259	REP	4	LAST 1469	27,3431	6 0303 1		AD	UPCOUNT
0260	REP	727	LAST 1469	27,3432	54 158 1	+2	TS	MPAC +2
0261	REP	2	LAST 1469	27,3433	3 3501 0	+3	CAP	UPLOADNV
0262	REP	250	LAST 1469	27,3434	0 4555 0		TC	BANKCALL
0263	REP	14	LAST 1469	27,3435	20465 1		CADR	GODSPF
0264	REP	2	LAST 1469	27,3436	1 3675 1		TCP	UPOUT4
0265	REP	2	LAST 1469	27,3437	1 3433 1		TC	CHWELL2 +3
0266	REP	2	LAST 1469	27,3440	0 3471 0		CS	CK4V32
0267	REP	5	LAST 1469	27,3441	4 0303 0		AD	UPCOUNT
0268	REP	6	LAST 1469	27,3442	6 0300 1		EXTEND	
0269				27,3443	0 0006 1		BZMP	UPVERIFY
0270	REP	1		27,3444	6 3446 1		TCP	CHWELL2 -1
0272	REP	3	LAST 1469	27,3445	1 3427 1			
0273								YES- GO TO VERIFICATION SEQUENCE NO- REQUEST ADDITIONAL DATA.

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## L UPDATE PROGRAM

0274	RSP	1	27,3446	3 3477 0	UPVERIFY CAP	ADUITEMP
0275	RSP	728	LAST 1469	27,3447 54 156 1	TS	MPAC +2
0276	RSP	1	27,3450	3 3502 0	CAP	UPVRPYNV
0277	RSP	251	LAST 1469	27,3451 0 4555 0	TC	BANKCALL
0278	RSP	15	LAST 1469	27,3452 20485 1	CADR	GOKDSPP
0279	RSP	3	LAST 1469	27,3453 1 3675 1	TCP	UPOUT4
0280	RSP	1	27,3454	1 3503 0	TCP	UPSTORE
0281	RSP	3	LAST 1469	27,3455 0 3471 0	TC	OK4V32
0282	RSP	2	LAST 70	27,3456 3 0330 1	CA	UPTEMP
0283			27,3457	0 0006 1	EXTEND	
0284	RSP	2	LAST 1469	27,3460 6 3446 1	BZMP	UPVERIFY
0285	RSP	3	LAST 1470	27,3461 4 0330 0	CS	UPTEMP
0286	RSP	7	LAST 1469	27,3462 6 0300 1	AD	COMPNUMB
0289	RSP	82	LAST 1433	27,3463 6 4712 1	AD	BIT1
0290			27,3464	0 0006 1	EXTEND	
0291	RSP	3	LAST 1470	27,3465 6 3446 1	BZMP	UPVERIFY
0292	RSP	2	LAST 1469	27,3466 3 3645 0	CAF	ADUPBFM1
0293	RSP	4	LAST 1470	27,3467 6 0330 1	AD	UPTEMP
0294	RSP	4	LAST 1469	27,3470 1 3432 0	TCP	CHWELL2 +2
0295	RSP	2	LAST 1468	27,3675	UPOUT4	EQUALS UPOUT +1
R0296			CHECK FOR VERB 32 SEQUENCE			COMES HERE ON V34 TO TERMINATE UPDATE
0297	RSP	729	LAST 1470	27,3471 4 0154 0	OK4V32	CS MPAC
0298	RSP	57	LAST 1445	27,3472 7 4705 0	MASK	BITB
0299	RSP	426	LAST 1468	27,3473 10 0000 0	CCS	A
0300	RSP	362	LAST 1468	27,3474 0 0002 0	TC	0
0301	RSP	363	LAST 1470	27,3475 50 002 0	INDEX	0
0302			27,3476 7<7771 0	TC	0 -6	
0305	RSP	5	LAST 1470	27,3477 00330 1	ADUITEMP	ADRES
0306	RSP	11	LAST 1469	27,3500 00304 0	ADUPBUFF	ADRES
0307			27,3501 05201 1	UPLOADINV	VN 2101	
0308			27,3502 05202 1	UPVRPYNV	VN 2102	
0309	RSP	3	LAST 1174	4376	UP21	= MD1
03121	RSP	30	LAST 1435	4715	UPDTPHAS	EQUALS FIVE
R0313			PRE-STOR AND PAN TO APPROPRIATE BRANCH SEQUENCE			
0314			27,3503	UPSTORE	EQUALS	GROUND HAS VERIFIED UPDATE. STORE DATA.
0315			27,3503 0 0004 0		INHINT	
0316	RSP	25	LAST 1463	27,3504 30 103 0	CAB	FLAGRD7
0317	RSP	251	LAST 1464	27,3505 56 001 0	XCH	L
0318	RSP	39	LAST 1448	27,3506 3 4710 0	CAP	BIT3
0319			27,3507 0 0006 1	EXTEND		
0320	RSP	17	LAST 1454	27,3510 08 001 0	RXOR	LCHAN

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PLACE ECADR WHERE COMPONENT NO. INDEX IS TO BE STORED INTO R3.  
 (OK4V32 RETURNS HERE IF V32 ENCOUNTERED)  
 DISPLAY A FLASHING V2IN02 TO REQUEST DATA CORRECTION OR VERIFICATION.  
 V34 TERMINATE UPDATE(P27) RETURN  
 V33 DATA SENT IS GOOD, GO STORE IT.  
 COMPONENT NO. INDEX OR V32 RETURN DOES THE COMPONENT NO. INDEX JUST SENT SPECIFY A LEGAL COMPONENT NUMBER? NO, IT IS NOT POSITIVE NONZERO

NO  
 YES- BASED ON THE COMPONENT NO. INDEX CALCULATE THE ECADR OF LOCATION IN UPBUFF WHICH USER WANTS TO CHANGE.

COMES HERE ON V34 TO TERMINATE UPDATE

ON DATA RETURN FROM «GOKDSPF»  
 ON DATA RETURN FROM «GOKDSPF» THE CONTENTS OF MPAC = VERB. SO TEST FOR V32. IT'S NOT A V32, IT'S DATA. PROCEED.

V32 ENCOUNTERED - GO BACK AND GET DATA

ADDRESS OF TEMP STORAGE FOR CORRECTIONS  
 ADDRESS OF UPDATE DATA STORAGE BUFFER  
 VERB 21 NOUN 01  
 VERB 21 NOUN 02  
 DEC 21 = MAX NO OF COMPONENTS +1

INVERT VERIFLAG(BIT3 OF FLAGRD7) TO INDICATE TO THE GROUND(VIA DOWNLINK) THAT THE V33(WHICH THE GROUND SENT TO VERIFY THE UPDATE) HAS BEEN SUCCESSFULLY RECEIVED BY THE UPDATE PROGRAM

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## L UPDATE PROGRAM

0321	REP 26 LAST 1470	27,3511 54 103 1	TS	FLAGRD7		
0322	REP 103 LAST 1468	27,3512 0 5301 0	TC	PHASCHNG	SET RESTART GROUP 6 TO REDO THE UPDATE	
0323		27,3513 04026 1	OCT	04026	DATA STORE IF A RESTART OCCURS.	
0324		27,3514 0 0004 0	INHINT		(BECAUSE PHASCHNG DID A RELINT)	
0325	REP 82 LAST 1469	27,3515 4 4711 0	CS	TWO	GO TO UPNDVAC IF INSTALL IS REQUIRED,	
0326	REP 4 LAST 1469	27,3516 6 0302 0	AD	UPVERB	THAT IS, IF IT=S A V70 - VT2.	
0327		27,3517 0 0006 1	EXTEND		GO TO UPEND73 IF IT=S A VT3.	
0328	REP 1	27,3520 6 3527 1	BZNP	UPNDVAC		
R0330	VERB 73 BRANCH					V73-PERFORM DP OCTAL AGC CLOCK INCREMENT
0331		27,3521 0 0006 1	UPEND73	EXTEND		
0332	REP 12 LAST 1470	27,3522 3 0305 1	DCA	UPBUFF		
0333	REP 13 LAST 1471	27,3523 52 315 1	DXCH	UPBUFF +8D		
0334	REP 1	27,3524 0 3552 0	TC	TIMEDIDL	ERROR- TURN ON #OPERATOR ERROR# LIGHT	
0335	REP 7 LAST 358	27,3525 0 4400 1	TC	PALTON	GO TO COMMON UPDATE PROGRAM EXIT	
0336	REP 3 LAST 1470	27,3526 0 3875 0	TC	UPOUT +1	(USE EXTENDED VERB PRIORITY)	
0337	REP 7 LAST 1417	27,3527 3 4371 0	UPNDVAC	CAP	GET VAC AREA FOR «CALL INTSTALL»	
0338	REP 34 LAST 1446	27,3530 0 5042 1	TC	FINDVAC	(NOTE: THIS WILL ALSO SET EBANK FOR	
0339	REP 14 LAST 1467	E3,1708	EBANK=	TEPHEM	«TEPHEM» UPDATE BY V70)	
0340	REP 1	27,3531 03534 0	2CADR	UPJOB	THIS COULD BE A STATE VECTOR UPDATE--SO	
0340	REP 1	27,3532 58103 0	TC	ENDOPJOB	WAIT(PUT JOB TO SLEEP) IF ORBIT INT(OI)	
0341	REP 122 LAST 1463	27,3533 0 5112 0	TC	INTPRET	IS IN PROGRESS--OR--GRAB OI AND RETURN	
0342	REP 245 LAST 1336	27,3534 0 8006 1	UPJOB	CALL	TO UPWAKE IF OI IS NOT IN PROGRESS.	
0343		27,3535 77824 1		INTSTALL		
0344	REP 32 LAST 1298	27,3536 27371 1				
A0345						
0346		27,3537 77776 1	UPWAKE	EXIT		
0347	REP 104 LAST 1471	27,3540 0 5301 0	TC	PHASCHNG	RESTART PROTECT(GROUP 6)	
0348		27,3541 04026 1	OCT	04026		
0350	REP 55 LAST 1444	27,3542 0 5435 0	TC	UPFLAG	SET INTEGRATION RESTART BIT	
0351	REP 5 LAST 1317	27,3543 00236 0	ADRES	REINITLG		
0352		27,3544 0 0004 0	INHINT			
0355		27,3545	UPPART3	EQUALS		
0356	REP 5 LAST 1471	27,3545 50 302 0	INDEX	UPVERB	BRANCH TO THE APPROPRIATE UPDATE VERB	
0357		27,3546 1 3547 0	TCF	+1	ROUTINE TO ACTUALLY PERFORM THE UPDATE	
0358	REP 1	27,3547 1 3706 1	TCF	UPEND70		
0359	REP 1	27,3550 1 3815 1	TCF	UPEND71	VT0	
0360	REP 1	27,3551 1 3847 0	TCF	UPEND72	VT1	
R0361	ROUTINE TO INCREMENT CLOCK(TIME2, TIME1) WITH CONTENTS OF DP WORD AT UPBUFF.					VT2

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L	UPDATE PROGRAM	USER#S PAGE NO.	8	E3 S4
0363		27,3552 0 0006 1	TIMEDIDL EXTEND	
0364	REF 6 LAST 1470	27,3553 22 330 1	QXCH UPTEMP	SAVE Q FOR RETURN
0365	REF 266 LAST 1466	27,3554 3 4714 1	CAP ZERO	ZERO AND SAVE TIME2, TIME1
0366		27,3555 22 007 0	ZL	
0367	REF 34 LAST 1416	27,3556 52 025 1	DXCH TIME2	
0368	REF 14 LAST 1471	27,3557 52 327 0	DXCH UPBUFF +18D	STORE IN CASE OF OVERFLOW
0369	REF 1	27,3560 3 4715 0	CAP UPDTPHAS	DO
0370	REF 252 LAST 1470	27,3561 54 001 1	TS L	A
0371		27,3562 4 0000 0	COM	QUICK
03711	REF 3 LAST 652	27,3563 52 765 1	DXCH -PHASE6	PHASING
0372		27,3564 0 0004 0	TIMEDIDL INHINT	
0373	REF 267 LAST 1472	27,3565 3 4714 1	CAP ZERO	
0374		27,3566 22 007 0	ZL	PICK UP INCREMENTER(AND ZERO
0375	REF 730 LAST 1470	27,3567 54 156 1	TS MPAC +2	IT IN CASE OF RESTARTS) AND
0376	REF 15 LAST 1472	27,3570 52 315 1	DXCH UPBUFF +8D	STORE IT
0377	REF 731 LAST 1472	27,3571 52 155 1	DXCH MPAC	INTO MPAC FOR TPAGREE.
0378		27,3572 0 0006 1	EXTEND	
0379	REF 16 LAST 1472	27,3573 3 0327 1	DCA UPBUFF +18D	
0380	REF 732 LAST 1472	27,3574 20 155 1	DAS MPAC	FORM SUM IN MPAC
0381		27,3575 0 0006 1	EXTEND	
0382	REF 1	27,3576 1 3605 0	BZP DELTATOK	TEST FOR OVERFLOW
0383	REF 266 LAST 1472	27,3577 3 4714 1	CAP ZERO	
0384	REF 17 LAST 1472	27,3600 52 327 0	DXCH UPBUFF +18D	OVERFLOW, RESTORE OLD VALUE OF CLOCK
0385	REF 35 LAST 1472	27,3601 20 025 1	DAS TIME2	AND TURN ON OPERATOR ERROR
0386	REF 105 LAST 1471	27,3602 0 5301 0	TC PHASING	RESTART PROTECT(GROUP 6)
0387		27,3603 04026 1	OCT 04026	
0388	REF 7 LAST 1472	27,3604 0 0330 1	TC UPTEMP	GO TO ERROR EXIT
0389	REF 14 LAST 1416	27,3605 0 7226 0	DELTATOK TC	FORCE SIGN AGREEMENT
0390	REF 733 LAST 1472	27,3606 52 155 1	DXCH MPAC	
0391	REF 36 LAST 1472	27,3607 20 025 1	DAS TIME2	INCREMENT TIME2, TIME1
0392	REF 106 LAST 1472	27,3610 0 5301 0	TC PHASING	RESTART PROTECT(GROUP 6)
0393		27,3611 04026 1	OCT 04026	
0394		27,3612 0 0004 0	INHINT	
0395	REF 6 LAST 1472	27,3613 50 330 1	INDEX UPTEMP	(CODED THIS WAY FOR RESTART PROTECTION)
0396		27,3614 0 0001 0	TC 1	NORMAL RETURN
R0397	VERB 71 BRANCH			
0402	REF 16 LAST 1472	27,3615 30 305 1	UPEND71 CAE	SET EBANK
0403	REF 66 LAST 1443	27,3616 54 003 0	TS EBANK	AND
0404	REF 17 LAST 1403	27,3617 7 4373 0	MASK LOW6	CALCULATE
0405	REF 9 LAST 1472	27,3620 54 330 0	TS UPTEMP	S-REG VALUE OF RECEIVING AREA

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## L UPDATE PROGRAM

0406	REP	5	LAST	1403	27,3621	6	7714	1		AD	NEG3
0407	REP	8	LAST	1470	27,3622	6	0300	1		AD	COMPNUMB
0408					27,3623	0	0006	1		EXTEND	
0409	REP	1			27,3624	1	3832	1		B2P	STORLP71
0410	REP	39	LAST	1435	27,3625	7	4702	1		MASK	BIT9
0411	REP	427	LAST	1470	27,3626	10	0000	0		CCS	A
0412	REP	2	LAST	1468	27,3627	1	3743	0		TCP	UPERROUT
0413	REP	6	LAST	1473	27,3630	3	7714	1		CA	NEG3
0414	REP	9	LAST	1473	27,3631	6	0300	1		AD	COMPNUMB
0415	REP	134	LAST	1472	27,3632	54	154	0	STORLP71	TS	MPAC
0416	REP	428	LAST	1473	27,3633	50	000	1		INDEX	A
0417	REP	19	LAST	1472	27,3634	3	0306	1		CA	UPBUFP +2
0418	REP	253	LAST	1472	27,3635	54	001	1		TS	L
0419	REP	135	LAST	1473	27,3636	3	0154	1		CA	MPAC
0420	REP	10	LAST	1472	27,3637	6	0330	1		AD	UPTEMP
0421	REP	429	LAST	1473	27,3640	50	000	1		INDEX	A
0422					E3,1400					EBANK=	1400
0423					27,3641	23	400	1		LXCH	1400
0424	REP	15	LAST	1471	E3,1706					EBANK=	TEPHEM
0425	REP	136	LAST	1473	27,3642	10	154	0		CCS	MPAC
0426	REP	2	LAST	1473	27,3643	1	3832	1		TCP	STORLP71
0427	REP	4	LAST	1471	27,3644	1	3874	0		TCP	UPOUT
0428	REP	20	LAST	1473	27,3645	00303	1		ADUPBPM1	ADRES	UPBUFP -1
0429	REP	5	LAST	1473	27,3646	1	3874	0		TCP	UPOUT
R0430					VR&B 72 BRANCH						
0431	REP	63	LAST	1470	27,3647	3	4712	1	UPEND72	CAP	BIT1
0432	REP	10	LAST	1473	27,3650	7	0300	0		MASK	COMPNUMB
0433	REP	430	LAST	1473	27,3651	10	000	0		CCS	A
0434					27,3652	1	3854	1		TCP	+2
0435	REP	3	LAST	1473	27,3653	1	3743	0		TCP	UPERROUT
0451	REP	47	LAST	1469	27,3654	4	4711	0		CS	BIT2
0452	REP	11	LAST	1473	27,3655	6	0300	1		AD	COMPNUMB
0453	REP	137	LAST	1473	27,3656	54	154	0	LDLOOP72	TS	MPAC
0454	REP	431	LAST	1473	27,3657	50	000	1		INDEX	A
0455	REP	21	LAST	1473	27,3660	30	305	1		CAB	UPBUFP +1
0456	REP	432	LAST	1473	27,3661	22	000	1		LXCH	A
0457	REP	138	LAST	1473	27,3662	10	154	0		CCS	MPAC
0458	REP	139	LAST	1473	27,3663	54	154	0		TS	MPAC
0459	REP	433	LAST	1473	27,3664	50	000	1		INDEX	A
0460	REP	22	LAST	1473	27,3665	30	305	1		CAB	UPBUFP +1
0461	REP	67	LAST	1472	27,3666	54	003	0		TS	EBANK
0462	REP	18	LAST	1472	27,3667	7	4373	0		MASK	LOW8
0463	REP	434	LAST	1473	27,3670	50	000	1		INDEX	A
0464					E3,1400					EBANK=	1400
0465					27,3671	23	400	1		LXCH	1400
0466	REP	16	LAST	1473	E3,1706					EBANK=	TEPHEM

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IN THE PROCESS OF  
PERFORMING  
THIS UPDATE  
WILL WE  
OVERFLOW  
INTO THE NEXT EBANK....  
YES

NO. CALCULATE NUMBER OF  
WORDS TO BE STORED MINUS ONE  
SAVE NO. OF WORDS REMAINING MINUS ONE  
TAKE NEXT UPDATE WORD FROM  
UPBUFP AND  
SAVE IT IN L  
CALCULATE NEXT  
RECEIVING ADDRESS

UPDATE THE REGISTER BY CONTENTS OF L  
ARE THERE ANY WORDS LEFT TO BE STORED  
YES  
NO. THEN EXIT UPDATE PROGRAM  
SAME AS ADUPBUFP BUT LESS 1 (DON'T MOVE)  
NO. EXIT UPDATE (HERE WHEN COMPNUMB = 3)

HAVE AN ODD NO. OF COMPONENTS  
BEEN SENT FOR A V72 UPDATE...

YES  
ERROR- SHOULD BE ODD NO. OF COMPONENTS

NOW PERFORM THE UPDATE

PICK UP NEXT UPDATE WORD

SET POINTER TO ECADR (MUST BE CCS)

PICK UP NEXT ECADR OF REG TO BE UPDATED  
SET EBANK  
ISOLATE RELATIVE ADDRESS

UPDATE THE REGISTER BY CONTENTS OF L

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L UPDATE PROGRAM

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0467	REP 740	LAST 1473	27,3872	10 154 0	COS	MPAC	
0468	REP 1		27,3873	1 3656 0	TCP	LDLOOP72	
R0469		NORMAL FINISH OF P27					ARE WE THROUGH THE V72 UPDATE... NO
0470			27,3874		UPOUT	EQUALS	
0471	REP 1		27,3874	0 2862 1	TC	INTWAKEU	
0472	REP 3	LAST 1467	27,3875	30 301 0	+1	CAB	UPOLDMOD
0473	REP 14	LAST 1468	27,3876	0 5246 1	TC	NEWMODEX +3	RELEASE GRAB OF ORBITAL INTEGRATION RESTORE PRIOR P27 MODE
0474	REP 269	LAST 1472	27,3877	3 4714 1	CAP	ZERO	
0475	REP 8	LAST 1466	27,3700	54 332 1	TS	DNLSTCOD	
0476	REP 3	LAST 563	27,3701	0 3750 0	TC	UPACTOFF	TURN OFF «UPLINK ACTIVITY» LIGHT
0477			27,3702	0 0006 1	EXTEND		
0478	REP 17	LAST 1392	27,3703	3 4714 1	DCA	NEGO	KILL GROUP 6.
0479	REP 4	LAST 1472	27,3704	52 765 1	DXCH	-PHASE8	
0480	REP 36	LAST 691	27,3705	0 5423 1	TC	ENDEXT	EXTENDED VERB EXIT
R0481		VERB 70 BRANCH					
0482			27,3706	0 0006 1	UPEND70	EXTEND	
0483	REP 23	LAST 1473	27,3707	4 0305 0	DCS	UPBUFP	V70 DOES THE FOLLOWING WITH DP DELTA TIME IN UPBUFP
0484	REP 24	LAST 1474	27,3710	52 315 1	DXCH	UPBUFP +8D	
0485	REP 2	LAST 1471	27,3711	0 3552 0	TC	TIMEDIDL	DECREMENT AGC CLOCK
0486	REP 4	LAST 1473	27,3712	0 3743 1	TC	UPRROUT	ERROR WHILE DECREMENTING CLOCK -- EXIT
0487	REP 17	LAST 1473	27,3706		EBANK= T8PHM4		
0488			27,3713	0 0006 1	EXTEND		
0489	REP 25	LAST 1474	27,3714	4 0305 0	DCS	UPBUFP	
0490	REP 26	LAST 1474	27,3715	52 317 0	DXCH	UPBUFP +10D	COPY DECREMENTERS FOR RESTART PROTECTION
0491			27,3716	0 0006 1	EXTEND		
0492	REP 27	LAST 1474	27,3717	4 0305 0	DCS	UPBUFP	
0493	REP 26	LAST 1474	27,3720	52 321 0	DXCH	UPBUFP +12D	
0494	REP 107	LAST 1472	27,3721	0 5301 0	TC	PHASCHNG	
0495			27,3722	04028 1	OCT	04028	RESTART PROTECT(GROUP 6)
0496	REP 290	LAST 1474	27,3723	3 4714 1	CAP	ZERO	
0497			27,3724	22 007 0	ZL		
0498	REP 29	LAST 1474	27,3725	52 317 0	DXCH	UPBUFP +10D	DECREMENT CSM STATE VECTOR TIME
0499	REP 3	LAST 204	27,3726	21<571 1	DAS	TETCSM	
0500	REP 291	LAST 1474	27,3727	3 4714 1	CAP	ZERO	
0501			27,3730	22 007 0	ZL		
0502	REP 30	LAST 1474	27,3731	52 321 0	DXCH	UPBUFP +12D	DECREMENT LEM STATE VECTOR TIME
0503	REP 3	LAST 64	27,3732	21<643 0	DAS	TETLEM	

## L UPDATE PROGRAM

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0504	REF 292 LAST 1474	27,3733 3 4714 1	CAP	ZERO		
0505		27,3734 22 007 0	ZL			
0506	REF 31 LAST 1474	27,3735 52 305 0	DXCH	UPBUFP		
0507	REF 18 LAST 1474	27,3736 21~710 1	DAS	TEPHEM +1	INCREMENT TP TEPHEM	
0508	REF 19 LAST 1475	27,3737 27~706 0	ADS	TEPHEM		
0509	REF 108 LAST 1474	27,3740 0 5301 0	TC	PHASCHNG	RESTART PROTECT GROUP 6)	
0510		27,3741 04028 1	OCT	04028		
0511	REF 32 LAST 1475	0304	EBANK=	UPBUFP		
0512	REF 6 LAST 1473	27,3742 0 3674 1	TC	UPOUT	GO TO STANDARD UPDATE PROGRAM EXIT	
R0513	ERROR SEQUENCE					
0514	REF 8 LAST 1471	27,3743 0 4400 1	UPERROUT	TC	PALTON	TURN ON *OPERATOR ERROR* LIGHT
0515	REF 7 LAST 1475	27,3744 1 3674 0	TC	UPOUT		GO TO COMMON UPDATE PROGRAM EXIT
0516	REF 9 LAST 1475	27,3745 0 4400 1	+2	TC	PALTON	TURN ON *OPERATOR ERROR* LIGHT
0517	REF 4 LAST 1474	27,3746 0 3750 0	TC	UPACTOPP	TURN OFF UPLINK ACTIVITY LIGHT	
0518	REF 39 LAST 1474	27,3747 0 5423 1	TC	ENDEXT	EXTENDED VERB EXIT	
A0519					(THE PURPOSE OF UPERROUT +2 EXIT IS	
A0520					TO PROVIDE AN ERROR EXIT WHICH DOES NOT	
A0521					RESET ANY RESTART GROUPS)	
A0522						
R0523	'UPACTOPP' IS A ROUTINE TO TURN OFF UPLINK ACTIVITY LIGHT ON ALL EXITS FROM UPDATE PROGRAM(P27).					
0525	REF 40 LAST 1470	27,3750 4 4710 1	UPACTOPP CS	BIT3		
0527		27,3751 0 0008 1	EXTEND			
0528	REF 36 LAST 1446	27,3752 03 011 1	WAND	DSALMOUT		
0530	REF 364 LAST 1470	27,3753 0 0002 0	TC	Q	TURN OFF UPLINK ACTIVITY LIGHT (BIT 3 OF CHANNEL 11)	

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USER'S PAGE NO. 1 ED 84

0001 22,3505 BANK 22  
0002 REP 1 22,2000 SETLOC RTBCODES  
0003 22,3505 BANK

0004 REP 13 LAST 1327 E5,1713 EBANK= XNB  
0005 REP 1 COUNT\* \$S/RTB

R0006 LOAD TIME2, TIME1 INTO MPAC'

0007 22,3505 0 0006 1 LOADTIME EXTEND  
0008 REP 37 LAST 1472 22,3506 3 0025 0 DCA TIME2  
0009 REP 2 LAST 1094 22,3507 1 6024 0 TCP SLOAD2

R0010 CONVERT THE SINGLE PRECISION 2<sup>-3</sup> COMPLEMENT NUMBER ARRIVING IN MPAC (SCALED IN HALF-REVOLUTIONS) TO A  
R0012 DP 1<sup>-3</sup> COMPLEMENT NUMBER SCALED IN REVOLUTIONS.

0016 REP 741 LAST 1474 22,3510 10 154 0 CDULOGIC CCS MPAC  
0017 REP 293 LAST 1475 22,3511 3 4714 1 CAP ZERO  
0018 22,3512 1 3515 1 TCP +3  
0019 22,3513 13 514 0 NOOP  
0020 REP 25 LAST 1177 22,3514 4 4675 0 CS HALF  
  
0021 REP 742 LAST 1476 22,3515 54 155 1 TS MPAC +1  
0022 REP 294 LAST 1476 22,3516 3 4714 1 CAP ZERO  
0023 REP 743 LAST 1476 22,3517 58 154 1 XCH MPAC  
0024 22,3520 0 0006 1 EXTEND  
0025 REP 26 LAST 1476 22,3521 7 4675 0 MP HALF  
0026 REP 744 LAST 1476 22,3522 20 155 1 DAS MPAC  
0027 REP 68 LAST 1355 22,3523 1 6030 0 TCP DANZIG MODE IS ALREADY AT DOUBLE-PRECISION

R0040 READ THE PIPS INTO MPAC WITHOUT CHANGING THEM'

0041 22,3524 0 0004 0 READPIPS INHINT  
0042 REP 13 LAST 1397 22,3525 3 0037 0 CA PIPAX  
0043 REP 745 LAST 1476 22,3526 54 154 0 TS MPAC  
0044 REP 4 LAST 1397 22,3527 3 0040 0 CA PIPAY  
0045 REP 746 LAST 1476 22,3528 54 157 0 TS MPAC +3  
0046 REP 7 LAST 1397 22,3531 3 0041 1 CA PIPAZ  
0047 22,3532 0 0003 1 RELINT  
0048 REP 747 LAST 1476 22,3533 54 161 0 TS MPAC +5  
  
0049 REP 295 LAST 1476 22,3534 3 4714 1 CAP ZERO  
0050 REP 748 LAST 1476 22,3535 54 155 1 TS MPAC +1  
0051 REP 749 LAST 1476 22,3536 54 160 1 TS MPAC +4  
0052 REP 750 LAST 1476 22,3537 54 162 0 TS MPAC +6  
  
0053 REP 3 LAST 1152 22,3540 1 6470 0 VECMODE TCP VMODE  
R0054 FORCE TP SIGN AGREEMENT IN MPAC'

0055 REP 15 LAST 1472 22,3541 0 7226 0 SGNAGREE TC TPAGREE

L RTB OF CODES

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0056 REP 69 LAST 1476 22,3542 1 6030 0 TCP DANZIG

R0057 CONVERT THE DP 1<sub>s</sub> COMPLEMENT ANGLE SCALED IN REVOLUTIONS TO A SINGLE PRECISION 2<sub>s</sub> COMPLEMENT ANGLE  
R0059 SCALED IN HALF-REVOLUTIONS.0060 REP 1 22,3543 0 3573 0 1STO2S TC 1TO2SUB  
0061 REP 296 LAST 1476 22,3544 3 4714 1 CAP ZERO  
0062 REP 751 LAST 1476 22,3545 54 155 1 TS MPAC +1  
0063 REP 5 LAST 1122 22,3546 1 6027 0 TCP NEWMODE

R0064 DO 1STO2S ON A VECTOR OF ANGLES'

0065 REP 2 LAST 1477 22,3547 0 3573 0 V1STO2S TC 1TO2SUB ANSWER ARRIVES IN A AND MPAC.

0066 REP 752 LAST 1477 22,3550 52 162 0 DXCH MPAC +5  
0067 REP 753 LAST 1477 22,3551 52 155 1 DXCH MPAC  
0068 REP 3 LAST 1477 22,3552 0 3573 0 TC 1TO2SUB  
0069 REP 754 LAST 1477 22,3553 54 156 1 TS MPAC +20070 REP 755 LAST 1477 22,3554 52 160 1 DXCH MPAC +3  
0071 REP 756 LAST 1477 22,3555 52 155 1 DXCH MPAC  
0072 REP 4 LAST 1477 22,3556 0 3573 0 TC 1TO2SUB  
0073 REP 757 LAST 1477 22,3557 54 155 1 TS MPAC +10074 REP 758 LAST 1477 22,3560 3 0161 1 CA MPAC +5  
0075 REP 759 LAST 1477 22,3561 54 154 0 TS MPAC0076 REP 178 LAST 1468 22,3562 3 4712 1 TPMODE CAP ONE MODE IS TP.  
0077 REP 6 LAST 1477 22,3563 1 6027 0 TCP NEWMODE

R0078 V1STO2S FOR 2 COMPONENT VECTOR. USED BY RR.

0079 REP 5 LAST 1477 22,3564 0 3573 0 ZV1STO2S TC 1TO2SUB  
0080 REP 760 LAST 1477 22,3565 52 160 1 DXCH MPAC +3  
0081 REP 761 LAST 1477 22,3566 52 155 1 DXCH MPAC  
0082 REP 6 LAST 1477 22,3567 0 3573 0 TC 1TO2SUB  
0083 REP 254 LAST 1473 22,3570 54 001 1 TS L  
0084 REP 762 LAST 1477 22,3571 3 0157 1 CA MPAC +3  
0085 REP 3 LAST 1476 22,3572 1 6024 0 TCP SLOAD2

R0086 SUBROUTINE TO DO DOUBLING AND 1&lt;sub&gt;s&lt;/sub&gt; TO 2&lt;sub&gt;s&lt;/sub&gt; CONVERSION'

0087 REP 763 LAST 1477 22,3573 52 155 1 1TO2SUB DXCH MPAC FINAL MPAC +1 UNSPECIFIED.  
22,3574 20 001 1 DDOUBL  
0088 REP 435 LAST 1473 22,3575 10 000 0 CCS A  
0089 REP 179 LAST 1477 22,3576 6 4712 1 AD ONE  
0090 22,3577 1 3601 1 TCP +2  
0091 22,3600 4 0000 0 COM THIS WAS REVERSE OF MSU.  
0092 AND SKIP ON OVERFLOW.  
0093 REP 764 LAST 1477 22,3601 54 154 0 TS MPAC

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0094	RESP 365	LAST 1475	22,3602	0 0002 0	TC	O
0095	RESP 436	LAST 1477	22,3603	50 000 1	INDEX	A
0096	RESP 8	LAST 1177	22,3604	3 4673 1	CAP	LIMITS
0097	RESP 765	LAST 1477	22,3605	26 154 0	ADS	MPAC
0098	RESP 366	LAST 1478	22,3606	0 0002 0	TC	O

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OVERFLOW UNCORRECT AND IN MSU.

L RTB OF CODES

USER=S PAGE NO. 4 ES S4

SUBROUTINE TO INCREMENT CDUS							
0102	REF 1	LAST 1336	22,3607 3 3622 1	INCRCDUS	CAP	LOCTHETA	
0103	REF 127	LAST 1336	22,3610 54 130 1		TS	BUF	
0104	REF 766	LAST 1476	22,3611 30 154 1		CAB	MPAC	
0105	REF 1		22,3612 0 3623 0		TC	CDUINC	
0106	REF 126	LAST 1479	22,3613 24 130 0		INCR	BUF	
0107	REF 767	LAST 1479	22,3614 30 157 1		CAB	MPAC +3	
0108	REF 2	LAST 1479	22,3615 0 3623 0		TC	CDUINC	
0109	REF 129	LAST 1479	22,3616 24 130 0		INCR	BUF	
0110	REF 766	LAST 1479	22,3617 30 161 1		CAB	MPAC +5	
0111	REF 3	LAST 1479	22,3620 0 3623 0		TC	CDUINC	
0112	REF 1		22,3621 1 3540 1		TCP	VECMODE	
0113	REF 23	LAST 1392	22,3622 01155 1	LOCTHETA	ADRES	THETAD	
R0114	THE FOLLOWING ROUTINE INCREMENTS IN 2S COMPLEMENT THE REGISTER WHOSE ADDRESS IS IN BUF BY THE 1S COMPL.						
R0116	QUANTITY FOUND IN TEM2. THIS MAY BE USED TO INCREMENT DESIRED IMU AND OPTICS CDU ANGLES OR ANY OTHER 2S COMPL.						
R0116	(+0 UNEQUAL TO -0) QUANTITY. MAY BE CALLED BY BANKCALL/SWCALL.						
0119	REF 6	LAST 1334	22,3623 54 142 1	CDUINC	TS	TEM2	1S COMPL. QUANT. ARRIVES IN ACC. STORE IT
0120	REF 130	LAST 1479	22,3624 50 130 0		INDEX	BUF	CHANGE 2S COMPL. ANGLE (IN BUF) INTO 1S
0121			22,3625 10 000 0		CCS	0	
0122	REF 160	LAST 1477	22,3626 6 4712 1		AD	ONE	
0123			22,3627 1 3833 0		TCP	+4	
0124	REF 161	LAST 1479	22,3630 6 4712 1		AD	ONE	
0125	REF 162	LAST 1479	22,3631 6 4712 1		AD	ONE	OVERFLOW HERE IF 2S COMPL. IS 160 DEG.
0126			22,3632 4 0000 0		COM		
0127	REF 7	LAST 1479	22,3633 6 0142 0		AD	TEM2	SULT MOVES FROM 2ND TO 3D QUAD. (OR BACK)
0129	REF 437	LAST 1476	22,3634 10 000 0		CCS	A	BACK TO 2S COMPL.
0130	REF 163	LAST 1479	22,3635 6 4712 1		AD	ONE	
0131			22,3636 1 3840 1		TCP	+2	
0132			22,3637 4 0000 0		COM		
0133	REF 6	LAST 1479	22,3640 54 142 1		TS	TEM2	STORE 14BIT QUANTITY WITH PRESENT SIGN
0134			22,3641 1 3845 1		TCP	+4	
0135	REF 436	LAST 1479	22,3642 50 000 1		INDEX	A	SIGN.
0137	REF 9	LAST 1476	22,3643 3 4673 1		CAB	LIMITS	FIX IT, BY ADDING IN 31777 OR 40000
0136	REF 9	LAST 1479	22,3644 6 0142 0		AD	TEM2	
0139	REF 131	LAST 1479	22,3645 50 130 0		INDEX	BUF	
0140			22,3646 54 000 0		TS	0	STORE NEW ANGLE IN 2S COMPLEMENT.
0141	REF 367	LAST 1476	22,3647 0 0002 0		TC	0	

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L RTE OP CODES

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P0142 RTE TO TORQUE GYROS, EXCEPT FOR THE CALL TO IMUSTALL. ECADR OF COMMANDS ARRIVES IN X1.

0144	RTP	41	LAST	1294	22,3650	50	120	1	PULSEIMU	INDEX	FIXLOC	ADDRESS OF GYRO COMMANDS SHOULD BE IN X1
0145	RTP	90	LAST	1344	22,3651	3	0046	0	CA	X1		
0146	RTP	252	LAST	1470	22,3652	0	4555	0	TC	BANKCALL		
0147	RTP	6	LAST	714	22,3653	17125	1		CADR	IMUPULSE		
0148	RTP	70	LAST	1477	22,3654	1	6030	0	TCP	DANZIG		

L REGS OF CODES

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P0149 EACH ROUTINE TAKES A 3X3 MATRIX STORED IN DOUBLE PRECISION IN A FIXED AREA OF ERASABLE MEMORY AND REPLACES IT  
 R0151 WITH THE TRANSPOSE MATRIX. TRANSP1 USES LOCATIONS XNB+0,+1 THROUGH XNB+16D, 17D AND TRANSP2 USES LOCATIONS  
 R0153 XNB1+0,+1 THROUGH XNB1+16D, 17D. EACH MATRIX IS STORED BY ROWS.

0154	REP	14	LAST	1476	22,3855	02713 0	XNBEB	ECADR	XNB
0155	REP	5	LAST	282	22,3856	02554 1	XNB1EB	ECADR	XNB1
0156	REP	15	LAST	1481	E5,1713			EBANK=	XNB
0164	REP	1			22,3857	3 3855 1	TRANSP1	CAP	XNB2B
0165	REP	68	LAST	1473	22,3860	54 003 0		TS	EBANK
0166	REP	16	LAST	1481	22,3661	53 $\alpha$ 716 1		DXCH	XNB +2
0167	REP	17	LAST	1481	22,3882	53 $\alpha$ 722 0		DXCH	XNB +8
0168	REP	18	LAST	1481	22,3863	53 $\alpha$ 716 1		DXCH	XNB +2
0169	REP	19	LAST	1481	22,3884	53 $\alpha$ 720 1		DXCH	XNB +4
0170	REP	20	LAST	1481	22,3865	53 $\alpha$ 730 0		DXCH	XNB +12D
0171	REP	21	LAST	1481	22,3688	53 $\alpha$ 720 1		DXCH	XNB +4
0172	REP	22	LAST	1481	22,3887	53 $\alpha$ 728 1		DXCH	XNB +10D
0173	REP	23	LAST	1481	22,3870	53 $\alpha$ 732 1		DXCH	XNB +14D
0174	REP	24	LAST	1481	22,3871	53 $\alpha$ 728 1		DXCH	XNB +10D
0175	REP	71	LAST	1480	22,3872	1 8030 0		TCP	DANZIG
0176	REP	6	LAST	1481	E5,1554			EBANK=	XNB1
0177	REP	1			22,3873	3 3856 1	TRANSP2	CAP	XNB1EB
0178	REP	69	LAST	1481	22,3874	54 003 0		TS	EBANK
0180	REP	7	LAST	1481	22,3875	53 $\alpha$ 557 0		DXCH	XNB1 +2
0181	REP	8	LAST	1481	22,3876	53 $\alpha$ 583 1		DXCH	XNB1 +8
0182	REP	9	LAST	1481	22,3877	53 $\alpha$ 557 0		DXCH	XNB1 +2
0183	REP	10	LAST	1481	22,3700	53 $\alpha$ 561 0		DXCH	XNB1 +4
0184	REP	11	LAST	1481	22,3701	53 $\alpha$ 571 1		DXCH	XNB1 +12D
0185	REP	12	LAST	1481	22,3702	53 $\alpha$ 561 0		DXCH	XNB1 +4
0186	REP	13	LAST	1481	22,3703	53 $\alpha$ 567 0		DXCH	XNB1 +10D
0187	REP	14	LAST	1481	22,3704	53 $\alpha$ 573 0		DXCH	XNB1 +14D
0188	REP	15	LAST	1481	22,3705	53 $\alpha$ 587 0		DXCH	XNB1 +10D
0191	REP	72	LAST	1481	22,3706	1 6030 0		TCP	DANZIG

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L RTB OP CODES

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R0192 THE SUBROUTINE SIGNMPAC SETS C(MPAC, MPAC +1) TO SIGN(MPAC).  
R0193 FOR THIS, ONLY THE CONTENTS OF MPAC ARE EXAMINED. ALSO +0 YIELDS POSMAX AND -0 YIELDS NEOMAX.

R0195 ENTRY MAY BE BY EITHER OF THE FOLLOWING:

R0196 1. LIMIT THE SIZE OF MPAC ON INTERPRETIVE OVERFLOW:  
R0197 ENTRY: BOMB  
R0198 SIGNMPAC

R0199 2. GENERATE IN MPAC THE SIGNUM FUNCTION OF MPAC:  
R0200 ENTRY: RTB  
R0201 SIGNMPAC

R0202 IN EITHER CASE, RETURN IS TO THE NEXT INTERPRETIVE INSTRUCTION IN THE CALLING SEQUENCE.

0204		22,3707	0 0006 1	SIGNMPAC EXTEND	
0205	REP 2	LAST 353	22,3710	3 4872 0	DCA DPOS MAX
0206	REP 769	LAST 1479	22,3711	52 155 1	DXCH MPAC
0207	REP 439	LAST 1479	22,3712	10 000 0	CCS A
0208	REP 297	LAST 1477	22,3713	3 4714 1	DPMODE CAP ZERO
0209	REP 4	LAST 1477	22,3714	1 6026 1	TCP SLOAD2 +2
0210			22,3715	1 3716 0	TCP +1
0211			22,3716	0 0006 1	EXTEND
0212	REP 3	LAST 1482	22,3717	4 4672 1	DCS DPOS MAX
0213	REP 5	LAST 1482	22,3720	1 6024 0	TCP SLOAD2

SETS MPAC +2 TO ZERO IN THE PROCESS

R0214 RTB OP CODE NORMUNIT IS LIKE INTERPRETIVE INSTRUCTION UNIT, EXCEPT THAT IT CAN BE DEPENDED ON NOT TO BLOW UP WHEN THE VECTOR BEING UNITIZED IS VERY SMALL -- IT WILL BLOW UP WHEN ALL COMPONENTS ARE ZERO. IF NORMUNIT R0216 IS USED AND THE UPPER ORDER HALVES OF ALL COMPONENTS ARE ZERO, THE MAGNITUDE RETURNED IN 38D WILL BE TOO LARGE R0218 BY A FACTOR OF 2(13) AND THE SQUARED MAGNITUDE RETURNED AT 34D WILL BE TOO BIG BY A FACTOR OF 2(26).

0222	REP 164	LAST 1479	22,3721	3 4712 1	NORMUNIT1 CAP ONE	
02221	REP 1		22,3722	1 3724 1	TCP NORMUNIT +1	
02222	REP 298	LAST 1482	22,3723	3 4714 1	NORMUNIT CAP ZERO	
02223	REP 42	LAST 1480	22,3724	6 0120 1	AD PIXLOC	
02224	REP 770	LAST 1462	22,3725	54 156 1	TS MPAC +2	
02225	REP 253	LAST 1480	22,3726	0 4555 0	TC BANKCALL	
0223	REP 3	LAST 1145	22,3727	01010 1	CADR VECAGREE	GET SIGN AGREEMENT IN ALL COMPONENTS
0224	REP 771	LAST 1482	22,3730	10 154 0	CCS MPAC	
0225	REP 1		22,3731	1 3765 1	TCP NOSIPT	
0226			22,3732	1 3734 0	TCP +2	
0227	REP 2	LAST 1482	22,3733	1 3765 1	TCP NOSIPT	
0228	REP 772	LAST 1462	22,3734	10 157 0	CCS MPAC +3	
0229	REP 3	LAST 1462	22,3735	1 3765 1	TCP NOSIPT	
0230			22,3736	1 3740 0	TCP +2	
0231	REP 4	LAST 1462	22,3737	1 3765 1	TCP NOSIPT	
0232	REP 773	LAST 1482	22,3740	10 161 0	CCS MPAC +5	
0233	REP 5	LAST 1482	22,3741	1 3765 1	TCP NOSIPT	
0234			22,3742	1 3744 1	TCP +2	
0235	REP 6	LAST 1482	22,3743	1 3765 1	TCP NOSIPT	

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0236	REP 774 LAST 1482	22,3744 3 0155 0	CA	MPAC +1	SHIFT ALL COMPONENTS LEFT 13
0237		22,3745 0 0006 1	EXTEND		
0238	REP 65 LAST 1449	22,3746 7 4675 0	MP	BIT14	
0239	REP 775 LAST 1483	22,3747 20 155 1	DAS	MPAC	DAS GAINS A LITTLE ACCURACY
0240	REP 776 LAST 1483	22,3750 3 0160 0	CA	MPAC +4	
0241		22,3751 0 0006 1	EXTEND		
02411	REP 86 LAST 1483	22,3752 7 4675 0	MP	BIT14	
02412	REP 777 LAST 1483	22,3753 20 160 1	DAS	MPAC +3	
02413	REP 778 LAST 1483	22,3754 3 0162 1	CA	MPAC +6	
02414		22,3755 0 0006 1	EXTEND		
02415	REP 87 LAST 1483	22,3756 7 4675 0	MP	BIT14	
02416	REP 779 LAST 1483	22,3757 20 162 0	DAS	MPAC +5	
02417	REP 5 LAST 1145	22,3760 3 4720 0	CAF	THIRTEEN	
02418	REP 780 LAST 1483	22,3761 50 156 0	INDEX	MPAC +2	
02419		22,3762 54 045 1	TS	37D	
0242	REP 67 LAST 1488	22,3763 0 4574 0	OPPTUNIT	TC POSTJUMP	
0243	REP 2 LAST 1088	22,3764 01024 0	CADR	UNIT +1	
02431	REP 299 LAST 1482	22,3765 3 4714 1	NOSHIFT	CAF ZERO	
02432	REP 1 LAST 1481	22,3766 1 3761 0	TCF	OPPTUNIT -2	
R0300	RTB VECAGREE	... FORCES SIGN AGREEMENT OF VECTOR IN MPAC.			
0301	REP 254 LAST 1482	22,3767 0 4555 0	VECSGNAG	TC BANKCALL	
0302	REP 4 LAST 1482	22,3770 01010 1	CADR	VECAGREE	
0303	REP 73 LAST 1481	22,3771 0 8030 1	TC	DANZIG	

\*\*\* END OF SATRAP .007 \*\*\*

SYMBOL TABLE LISTING, INCLUDING DEFINITION, HEALTH, PAGE OF DEF, # OF REPS, PAGE OF FIRST REP, PAGE OF LAST REP.

SYMBOL	DEF	H	REFERENCES	SYMBOL	DEF	H	REFERENCES	SYMBOL	DEF	H	REFERENCES
.05G	28,3237	834	1 804	-OCT10	6171	1083	1 1083	=14MS	17,3340	1024	7 1010 1024
.05GBIT	4710	= 57		-ON	40,2334	315	2 314	353	=====		=====
.05GSW	0146	= 57	4 804 823	-PHASE1	0752	73	6 181	1380 A	0000	= 37	439 60 1462
.166...	23,3430	1331	1 1327	-PHASE2	0754	73	3 181	197 A-PCHK	13,3138	1290	4 1287 1300
.3D	11,3674	1321	1 1292	-PHASE3	0756	73	3 181	528 ABCLOAD	41,2812	337	1 321
.5SEC	4731	1171	9 127 1414	-PHASE4	0760	73	3 181	852 ABLOAD	41,2877	338	1 321
.6SECTS	24,2774	655		-PHASE5	0762	73	4 181	779 ABORT	5804	= 1464	
=====	=====	=====	=====	-PHASE8	0764	73	4 181	1474 ABORT2	5824	1463	1 1463
+DESCQN	40,2204	313	1 313	-ROLL1	4377	= 960	1 958	ABS	00,3226	1151	2 1150
+DOWN	00,2610	1138	1 1137	-ROLL2	18,3740	960	1 958	ABVAL	00,3201	1150	
+LIMIT	42,3252	334	1 334	-SLOPE	18,3730	960	3 953	955 ABVALABS	00,3176	1150	1 1068
+MGA	E7,1625	= 120	9 120 629	-T-3	15,3785	1062	1 1057	ACADN63	24,2402	646	1 647
+ON	40,2314	314	3 314 353	-TORQUE	18,3673	958	1 957	ACADN65	24,2408	646	2 642 644
+ROLL1	4715	= 960	1 958	-TPER	E4,1745	= 69	7 89	514 ACRD2Y	17,3435	1027	1 1027
+ROLL2	4732	= 960	1 958	-UP	00,2620	1138	1 1137	ACBD2Z	17,3500	1026	1 1027
+TORQUE	16,3652	957	1 957	-VM/360K	15,3772	1062	2 1054	1082 ACCEPTUP	07,3828	1417	2 1418
+2ACTDEG	20,2145	687	2 888	-VMT/160	15,3772	= 1082	1 1054	ACCEPTWD	41,2027	316	2 318
=====	=====	=====	=====	-VREL	E7,1525	= 116	3 118	836 ACCOMP	11,2430	1305	1 1313
*NB\$M*	23,3601	1337	1 497	-VT/180	E8,1813	= 110	13 110	1055 ACCWD	E5,1522	= 97	2 433
*SN\$B*	23,3577	1337	5 281 687	-VT/180E	E8,1570	= 111	1 1053	ACORBD	E8,1830	= 107	5 107 1028
=====	=====	=====	=====	-1/KB2	28,3211	834	1 820	ACOS=0	00,3636	1159	4 1159 1181
-AYO	E3,1713	= 84	2 618 1220	-1/12	13,3757	1322	1 1311	ACOSABRT	00,3722	1181	
-BIT10	06,2763	155	1 151	-1/2+2	00,2444	1134	1 1155	ACOSOP	00,3720	1161	1 1159
-BIT14	7705	1173	2 686 904	-1/8	7710	1173	1 1089	ACOSSH	00,3713	1161	1 1159
-CCSPR	01,3153	1188	1 1189	-1CHK	43,3271	1385	5 1368 1371	ACOSST	00,3624	1159	1 1159
-CDUT+1	20,3710	1040	1 1039	-15DEGS	08,2508	144	1 143	ACOSST2	00,3641	1159	2 1159
-COMMAX	07,3544	1410	2 1392 1393	-2SEC	10,3877	1482	1 1446	ACOSZERO	00,3726	1161	1 1159
-COMMAX-	07,3545	1410	2 1392 1393	-4ACTDEG	20,2144	687	1 666	ACOS3	00,3851	1160	1 1181
-COSB	E5,1673	= 93	1 93	-50SC	04,3515	1259	1 1247	ACRBZ	17,3055	1015	2 1015
-DELAIG	E6,1878	= 109	5 109 1042	-6.05DEGS	28,3011	764	1 763	ACRJETS	17,3174	1019	2 1014 1027
-DELAIG	E6,1877	= 109	4 109 1042	-70DEGS	08,2505	144	1 143	ACROLL	17,3005	1014	
-DELAOG	E6,1875	= 109	3 109 1042	=====	=====	=====	=====	ACTCENT	E5,1632	= 91	3 91 487
-ELR	05,3166	169	2 185 186	/BUF+	00,2721	1142	2 1141	ACTIVE	22,3378	490	2 484 490
-ENDERAS	7712	1173	1 1080	/BUF-	00,2715	1141	2 1141	ACTLIM	20,3181	937	2 926 931
-ENDVAC	6220	1084	2 1080 1098	/MPAC+	00,2767	1143	2 1143	ACTSAT	20,3413	941	2 937
-ERTHAT	34,2277	531	1 526	/MPAC-	00,2783	1143	2 1143	ACYCHECK	17,3113	1018	
-FOURDT	17,2002	677	1 876	/NORM	00,2732	1142	1 1142	ACYJETS	17,3210	1020	2 1016 1027
-GYROMIN	07,3322	1402	2 1402 1405	/NORM2	00,2725	1142	1 1142	AC2Y	17,3453	1027	2 1027
-KSCALE	26,3313	835	1 805	=====	=====	=====	=====	ADB	E8,1655	= 108	7 108 1002
-KSCALE	26,3315	835	1 805	= .24	21,2610	988	1 985	ADPVEL	E8,1523	= 108	4 1001 1004
-KVSCALE	37,3671	842	1 836	=+.1SEC	17,3335	1024	5 1021 1028	ADDINDRF	33,3261	437	1 437
-MAXADR	4364	= 1364	1 1369	=+.14MS	21,3034	990	1 987	ADDRESS	6052	1079	
-MAXDELV	37,3135	784	1 782	=-.1SEC	17,3333	1024	3 1021 1024	ADDRWD	0118	.67	79 1077 1336
-MUDTC(E)	37,3355	790	1 790	=-2	7715	= 1020	4 1015 1028	ADENEXT	25,3024	617	1 615
-MUDTC(M)	37,3357	790		=-4	6061	= 1020	2 1015 1016	ADERCOMP	33,3346	439	

HEALTH KEY: NORMALLY DEFINED UNLESS FLAGGED AS FOLLOWS:

UN UNDEFINED = DEFINED BY EQUALS J DEFINED BY JOKER OR ERASE ANYWHERE MD MULTIPLY DEFINED  
 BD BADLY DEFINED CD DEFINITION ASSOCIATED WITH CONFLICT XX MISCELLANEOUS TROUBLE